Amateur Radio

VOL 54, No 6, JUNE 1986

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Did You Catch the Jubilee Train?

JOTA can be fun!

Novice Notes

Open Wire Feed Multi-Band Dipole

Construct

VFO with Digi-Readout

or

VFO for the FT-707

or

A Bracket to hold a Hand-Held in a Vehicle

Aerials to experiment with

The Hentenna

Stepped Loop Antenna

The AUSTRALIAN ELECTRONICS Monthly

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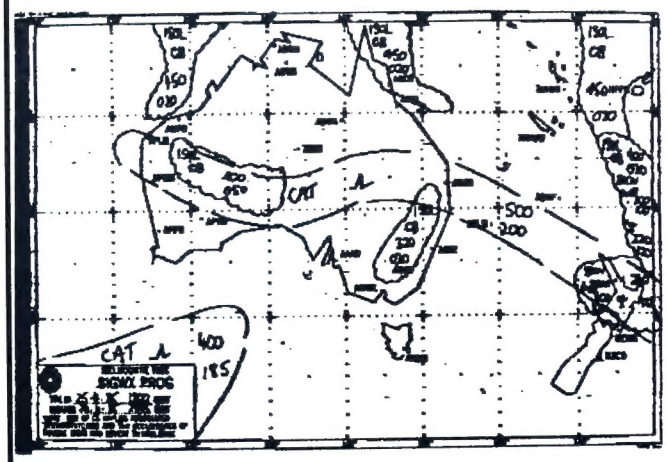

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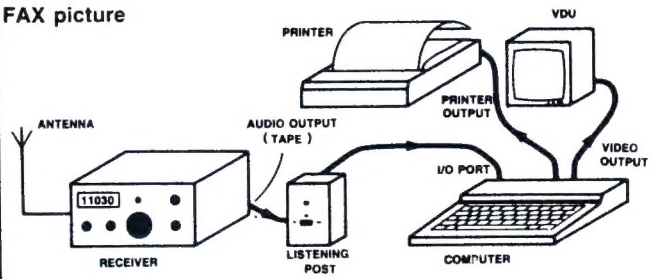

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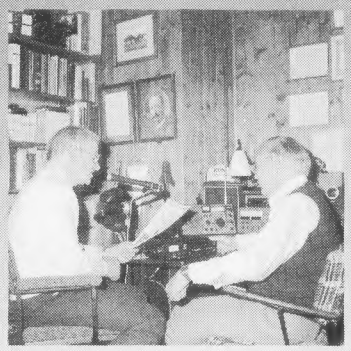

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Amateur Radio

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Make a date now. The 21st and 22nd June is your appointment to become involved in the 1986 Novice Contest (refer rules last issue, p41). Become involved and enjoy the fun, but remember to submit your log.

This month, a Stable VFO with Digital Read-out is detailed on page 10. This VFO uses available components (many of which can be found in the shack *junk-box*). It is simple, yet demanding in construction and with a little care, the satisfaction of completing such a project and using it is exhilarating.

There is also an External VFO for the FT-707 (p12), which fills a specific need for uses of this unit.

Two antennas are described, and one could be described a a little *weird*. The Hentenna is an interesting small project and has proved most successful for its many users whilst the other is for users of all bands, but particularly the lower bands.

Novices Notes compliments the antennas with an Open Wire Fed HF Multi-Band Dipole and should be of interest to everyone from the DXer to the SWL.

Wondering where to go for your next holiday? Phil VK2BPC, had this problem and solved it by a trip to Norfolk Island. Phil gives an enthusiastic account of his DXpedition when he met with many of the resident amateurs on the Island and the joy he had operating with low power.

Don't miss Amateur Radio is Contagious — a tribute by an amateur to his father who nurtured him into the ranks of a marvellous hobby.

Jamboree on the Air is fast approaching and lots of hints are given from one who was led into the hobby by JOTA.

The cyclone season in the north of our vast country did not pass without a decent cyclone making its presence felt. A small article depicts how WICEN assisted during Cyclone Winifred.

BKP

DEADLINE

All copy for inclusion in the August 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, 20th June 1986.

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HAMADS should be sent direct to the same address, by the same date.

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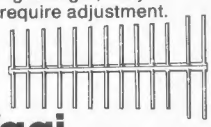

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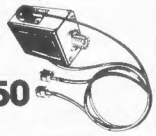

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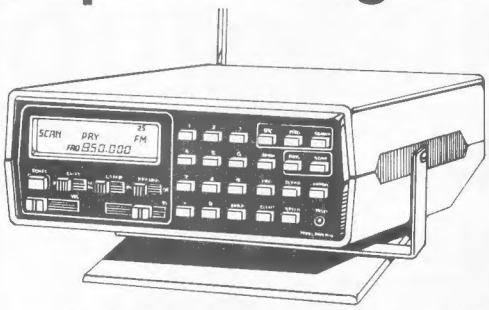

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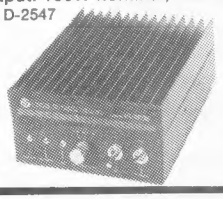

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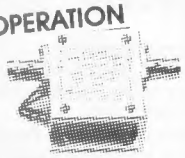

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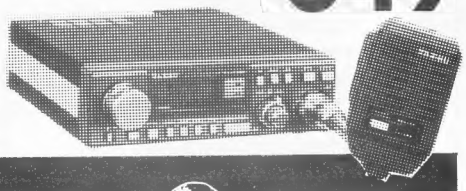

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Photograph by Fang Shaochu from China Reconstructs

The First Radio Group.

CHILDREN'S DAY

International Children's Day, 1st June, will see the amateur radio station of the Chinese Radio Sports Association (CRSA), together with the Beijing, Shanghai and Sichuan stations, participating in a festival for young amateurs.

These amateurs, mostly school students around 14-years of age together with a few primary school children around 10-years have been invited to operate the transceivers and send festival greetings to children world-wide. These greetings will be sent in English.

Last year, in a little over an hour, more than 70 stations had been contacted. Amateurs in the USA, USSR, Japan, Canada, India, Brunei and Hong Kong expressed their delight in contacting the young Chinese amateurs.

China began amateur radio communications in the late 1920s. The first amateur station of New China, BY1PK, was established in 1958. By 1966, six stations were established in the country, however, during ten years of cultural revolution all radio operation ceased. In March 1982, the CRSA station resumed operation with overseas stations.

With BY1PK, the stations of BY4AA, BY8AA, BY5RA and BY1QH are experimental bases for radio communication research and *cradles* for nurturing young radio specialists. Some children's palaces, scientific research station, universities and colleges plan to set up amateur radio stations to meet the needs of the young amateurs.

Building small transistor receiver sets has long been a popular past-time with Chinese children, but it has only been in recent years that transmission has also become involved.

BY1SK is located in the Children's Science and Technology Centre of Beijing's Zuanwu district and has a radio group of around 24, chosen from applicants from middle and primary schools in the district. They attend the centre twice weekly to study English and to practice Morse code. The group is in the care of instructor Gong Kelu, who participated in radio activities when he was in middle school.

Mastering Morse and studying English involves a lot of hard work and occasionally the children become bored and want to *drop-out*. On these occasions Gong Kelu relates a story of a young telegrapher during a disastrous earthquake in the city of Tangshan, during 1976. Though he had been badly injured in the first shock, he rallied his forces and when other communication lines lay in rubble, he managed to keep in communication with Beijing so that the central government could plan rescue efforts. This helps the children see how important the skills they are learning really are.

Youngsters from the group are assigned to be in charge of radio communications in the city of Beijing during summer camps and sports meets and have been highly praised for their good work.

Adapted from China Reconstructs, October 1985 which was contributed by John Brennan VK4SZ

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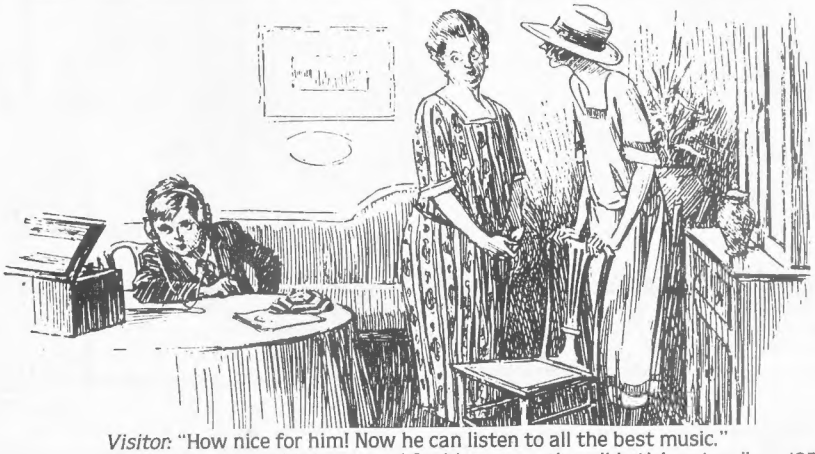


Cartoon from PUNCH magazine and contributed by Ivan Huser VK5QV

Visitor: "How nice for him! Now he can listen to all the best music."
Mother: "Yes — and it is so good for his ears — they did stick out so." — 1923

Editor's Comment

MORE TUB THUMPING!

I note in last month's issue that another member is taking me to task over the desirability of all amateurs belonging to their national society. He suggests that the individual non-member can still exert an influence on the political processes by which our legislative controls evolve; that the *lone wolf* can still have a political effect.

With respect, I am still forced to hold the opposite opinion. I have had experience over many years with various WIA committees assembling information on which negotiations can be based. Mostly such negotiations are with DOC or other Federal departments, but may also be with other societies, with IARU, or at Divisional level, with State or local government authorities. They may also be submissions to independent inquiries.

In some cases individuals, as well as the WIA, have put forward their ideas, for example by letters direct to Ministers. Usually it has been plainly obvious that individual opinions which do not reflect popular concepts will be politely, but effectively, ignored. Faced with the task of establishing a consensus acceptable to the majority, a Minister (or his advisers) can only take as a representative view that which is proposed by a representative body.

Frequently the WIA is asked by DOC what is our opinion of this or that individual submission. Clearly, the fact is that Government bodies do not have the time, or the inclination, to piece together a fragmentary jigsaw of individual letters. An organisation representing the majority of concerned individuals fits much better into the political system. If you want your view-point to carry the maximum of political weight, make it clear to your Institute first.

Arguments like these have been used by unions and associations of all kinds for decades. Few people will seriously disagree with them. But do not let us confuse them with other arguments sometimes raised in favour of compulsory unionism. There are some countries where you cannot get an amateur licence until you have joined the society. The society may even examine for, and award, the licence. Membership in those countries really is compulsory.

Our Australian tradition of *rugged individualism* has prevailed for many years over some who might favour compulsory membership. The WIA has no wish, nor could it have the power, to compel *lone wolves* to join. But our aim, as far as we possibly can, is to make the Institute so essential and attractive to Australian amateurs that none would wish to be outsiders!

Bill Rice VK3ABP
Editor

ar

THE HENTENNA

Tadashi Okubo JH1FCZ (ex JA2EP)
5288 Kuruhara, Zama, Kanagawa, 229, Japan

Many Japanese amateurs have been worked in Australia using about 10 watts of power and the Hentenna antenna. Their signals are always quite readable.

The *Hentenna* was developed several years ago by members of the Sagami Club and was introduced to the hand-made mini-magazine, *The Fancy Crazy Zippy.* In January 1977, it was printed in the magazine *Radio No Seisaku.* It has become very popular with young people on 50 MHz.

This antenna was not developed by any antenna technicians but by radio amateurs through their experimentations. This is a real *by the amateurs, for the amateurs, of the amateurs antenna.*

Recently, many people in Japan have been working DX on HF with the Hentenna, with two people completing WAC on 28 MHz using it.

LET'S MAKE THE HENTENNA

Many may think it a very strange name for an antenna but **HEN** means *weird* in Japanese. So let us see what is weird about it!

Figure 1 is the basic diagram of the Hentenna. It is half a wave length high and ⅙ of a wave length wide. It produces horizontal polarisation. If you know a little about antennas, you may have thought that a vertically polarised wave would be produced. This is the first weird thing about the Hentenna.

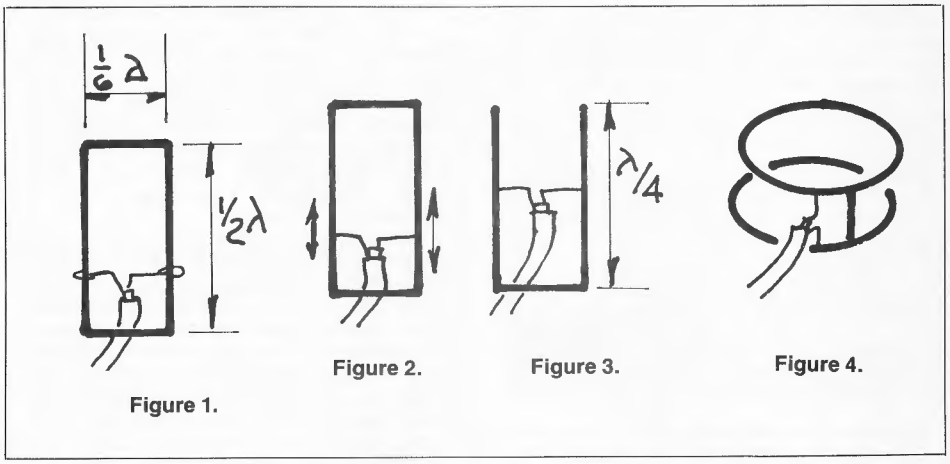


Figure 1. Figure 2. Figure 3. Figure 4.

The next thing is that it is not really necessary to make it half a wave length high and ⅙ of a wave length wide. You can make it a little fatter, thinner, taller or shorter. It still works well. A five to ten percent difference will not matter much. Mr Ota JI1CCH, made a 3.5 metre high Hentenna for 50 MHz. It still worked very well.

The third thing is the way the SWR is adjusted. Figure 2 shows how to adjust the SWR. The feed point is moved along the element and fasten it where the SWR is the lowest.

It has additional weird characteristics. It has as much gain as the Yagi antenna, though it is much simpler. (Technical Editor's Comment: Antenna Gain claims should always be taken with a grain of salt. Particularly unsubstantiated claims). DX QSOs by ground wave have been made with the Hentenna.

Moreover, one amateur used the Hentenna with a 1.5 watt SSB transceiver to QSO between Izu Peninsula and Tokushima, a distance of about 450 km. This is unbelievable and also impossible with a dipole antenna.

Now, what if you cut the Hentenna in half? It still works! This is called a *Fork Hentenna,* see Figure 3. What if you make it round as shown in Figure 4? It still works, also! This one is called a *Hat Hentenna.*

Have you ever heard of such a weird antenna? Hentenna is the weirdest antenna of all the antennas in the world. But it also has other characteristics besides it weirdness.

CHARACTERISTICS

Hentenna's structure is simple. Setting up, adjusting and dis-assembling can be done in a short time. This makes it ideal for use as a portable antenna.

Mr Shirtoto JA7QFB, uses a portable Hentenna. It takes him only two minutes to set-up and one minute seven seconds to dis-assemble. This is very helpful in case it suddenly begins to rain or if there is lightning. Plus it is very easy to move around. You only require to carry the pole and some other small accessories. It is very light-weight compared to the four and five element Yagi antennas.

There is no problems in a wind as the wind can just blow through it.

Hentenna's propagation pattern is a figure eight pattern so it is wrong to say that Hentenna is non-directional. But it has more gain than a dipole, so it can be called non-directional. It is unnecessary to rotate Hentenna, just erect it on the roof as you would a television antenna, without a rotator.

But, on the other hand, as it does have a figure eight pattern with no transmission or reception towards the sides of the antenna, the front to side ratio is very good.

LET'S MAKE IT YOURSELF

There are three ways to make the Hentenna. One is to make the element with wire and the frame with something like bamboo or wood. The easiest method is shown in Figure 6a.

Another way is to use aluminium pipes for the top and the bottom elements, and wire for the sides. This method is shown in Figure 6b. This is a very useful, portable antenna.

The third way of constructing a Hentenna is to make all the elements of aluminium pipes (Figure 6c). In this way, you can make a Hentenna which is suitable for 144 or 430 MHz.

Any of the three methods described above may be used, but the easiest method is explained here.

Set up the frame as in Figure 7. The frame needs to be very strong, so it is advisable to make it with wood, bamboo or aluminium pipe.

Connect both ends of an eight metre length of stranded wire to make a circle. It is okay to use a solderless terminal to link them together, but it is preferable to solder the join. It will be necessary to allow a little more than the eight metres specified for a soldered joint.

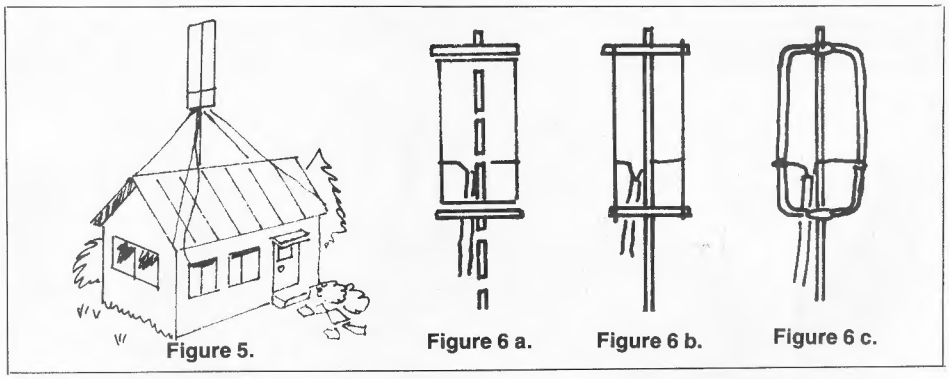
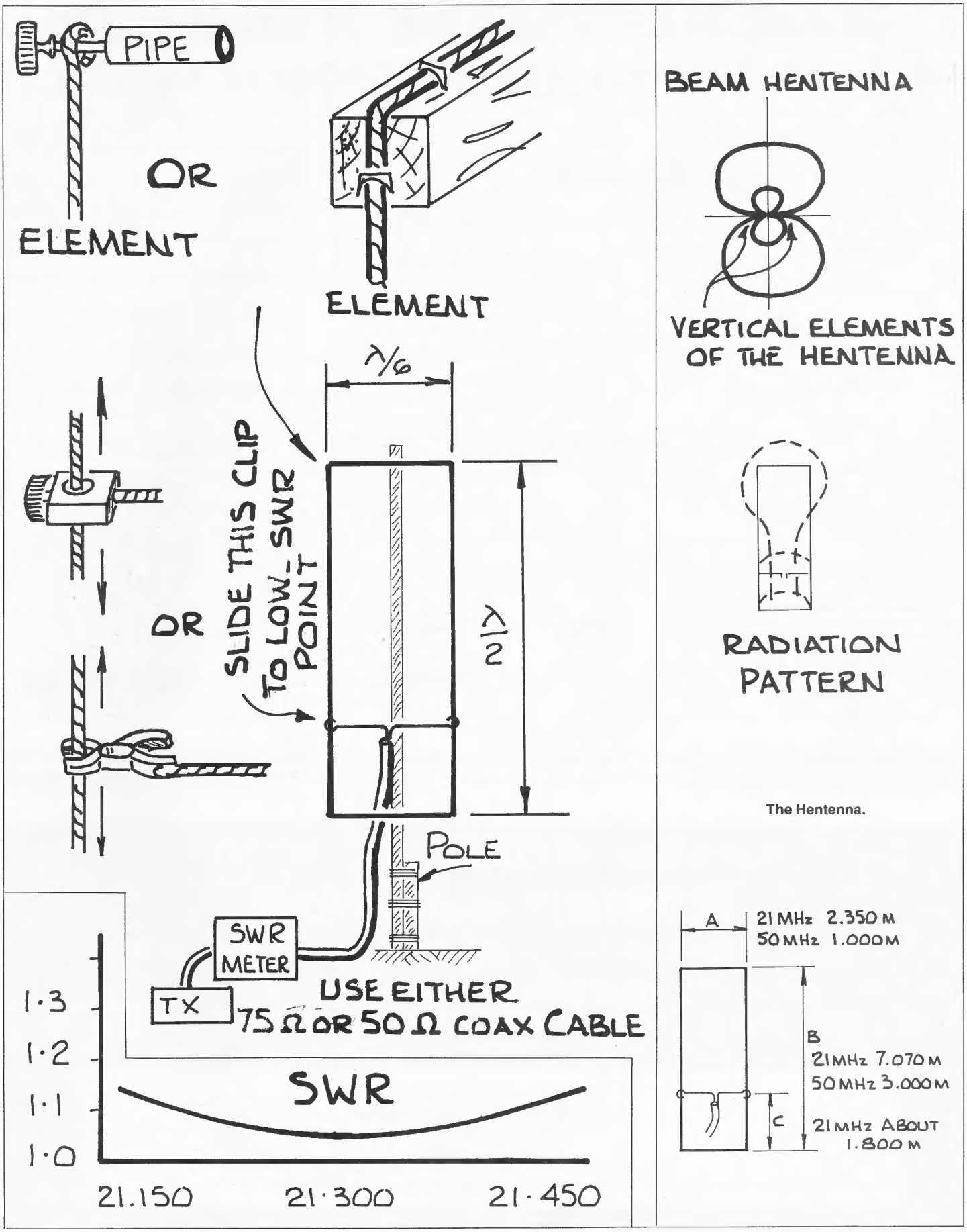


Figure 5. Figure 6 a. Figure 6 b. Figure 6 c.

The wire element, just made, has to be fastened very tightly to the frame with some strong twine or polyvinyl chloride wire. *See!* It is beginning to look like a Hentenna! ! !

The coaxial cable can be either a 3c2v or 5c2v 75 ohm series or a 3D2v or 5D2v 50 ohm series cable. RG58U is also acceptable.

Connect the coaxial connector to the coaxial cable as shown in Figure 14.



The Hentenna.

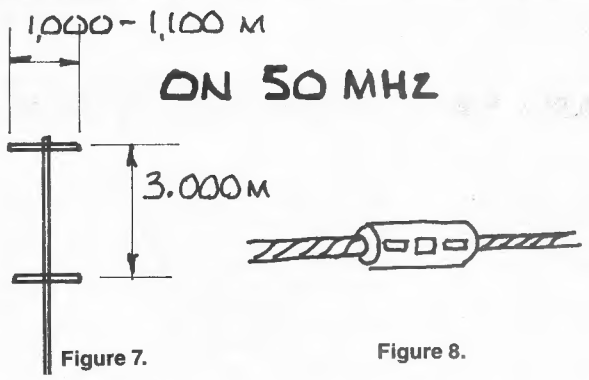


Figure 7.

Figure 8.

Figure 9.

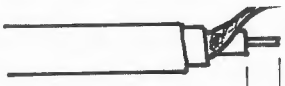
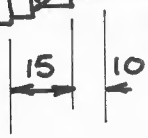


Figure 13.



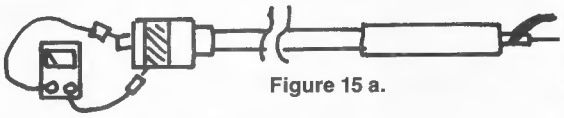


Figure 15 a.

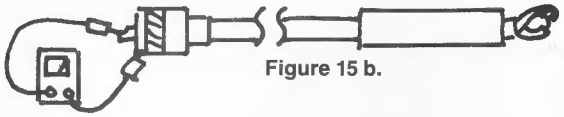


Figure 15 b.

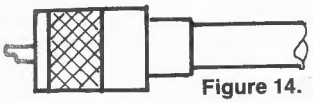


Figure 14.

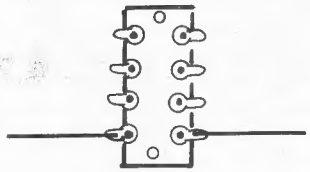


Figure 16 a.

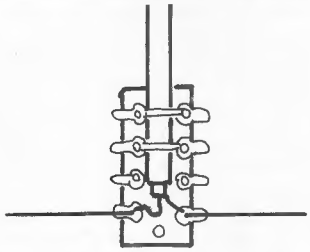


Figure 16 b.

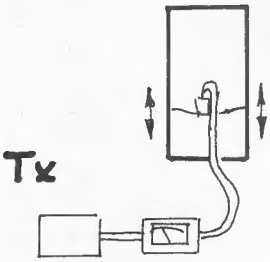


Figure 17. SWR METER

When the cable is connected make a continuity test on the insulation and centre wire to ensure that there are no shorts.

Connect 70 cm of tinned antenna wire to a eight pin terminal board as directed in Figure 16a. Solder the coaxial cable to this and secure it with tinned wire or similar. (Figure 16b).

Temporarily, set up the Hentenna in your chosen location. Find the point of the element where the SWR is at its lowest and mark this point.

Take the Hentenna down again and solder the feeder to the marked points.

There! Wasn't it easy? The only thing remaining is to erect it and steady it with guy-wires.

Presented by Kazunobu Nagatsu JK1IZF, 3310-1 Hei, Toyooka-town Mitsukaido-city, Ibaraki, 303 Japan and contributed by Ron Mills VK5XW.

ar

Be part of the fun during the 1986 Novice Contest
But please remember to submit your log to the FCM

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AR86

PARASITIC BEAM PROGRAM FOR COMMODORE 64

Joseph Ortuso VK7NJO
43 Bayfield Street, Bellerive, Tas. 7018

The following program enables measurements to be calculated for a three-element beam.

With this program you will be able to find out measurements for a three element beam for any frequency between 20 and 10 MT.B choosing any spacing between .1 to .30 wavelength.

It will also give approximate impedance at the feed point.

All the measurements are given both in imperial and metric.

An impedance matching system will still be required and final tuning adjustment will still be needed. In other words, all the rules in putting up a beam still apply.

The listing is pretty straight forward and in line zero you may wish to alter the screen colours. It is now set for my monochrome monitor. You will find the whole program is pretty well formatted.

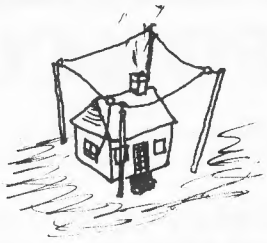
ar

```
0 POKE53280,4:POKE53281,4:PRINT"■"
5 PRINT"□"
10 PRINT"     *** PROGRAM BY JOSEPH ORTUSO***"
20 PRINT"                FOR COMMODORE 64":PRINT
30 PRINT" A PROGRAM TO CALCULATE DIMENSIONS FOR A 3 ELEMENT PARASITIC BEAM"
40 FORI=1TO40:PRINT"—";:NEXTI
50 PRINT" USE 1.5 INCHES OF O.DIAMETER TUBING      FOR 20 MT."
60 PRINT" AND 1 INCH OF O.DIAMETER TUBING          FOR 15 MT. AND UP":PRINT
70 PRINT" THE FORWARD GAIN FOR VARIOUS SPACINGS    IS BETWEEN 7.5 AND 8 DB."
80 FORI=1TO40:PRINT"—";:NEXTI
90 INPUT" WHICH FREQUENCY (MHZ) ";F:PRINT
100 PRINT" WHICH SPACING":INPUT".1 .15 .20 .25 .30 OF WAVE/L.";S
110 IFS<>.1ANDS<>.15ANDS<>.20ANDS<>.25ANDS<>.30THENPRINT"INVALID ENTRY":GOTO100
120 REM A=DRIVEN,D=DIRECTOR,R=REFLECTOR
130 IFS=.1THENA=474.5:D=465:R=500:H =15
140 IFS=.15THENA=472.8:D=460:R=496:H=20
150 IFS=.20THENA=470.5:D=452.5:R=490:H=30
160 IFS=.25THENA=468:D=442.5:R=484:H=48
170 IFS=.30THENA=467:D=435:R=480:H=80
180 A=A/F:D=D/F:R=R/F:X=0.305
190 A1=A*X:D1=D*X:R1=R*X
200 W=30000/F
210 W1=W*S/100
220 W2=W*S/100/0.305
230 PRINT"□"
240 PRINTTAB(12)"ELEMENT LENGTH":PRINT
250 PRINT" FOR";F;"■■MHZ. AND";S;"OF WAVEL. SPACING"
260 FORI=1TO40:PRINT"—";:NEXTI
270 PRINT" DRIVEN EL."
280 PRINTTAB(6) A;"FT OR";A1;"MT":PRINT
290 PRINT" DIRECTOR"
300 PRINTTAB(6) D;"FT OR";D1;"MT":PRINT
310 PRINT" REFLECTOR"
320 PRINTTAB(6) R;"FT OR";R1;"MT"
330 FORI=1TO40:PRINT"—";:NEXTI
340 PRINT:PRINT"THE SPACING IS" ;W1;"MT"
350 PRINT:PRINT"OR............";W2;"FT":PRINT
360 PRINT"RADIATION RESISTANCE IS APPROX.";H;"HOMS"
370 FORI=1TO40:PRINT"—";:NEXTI
380 PRINT"  WOULD YOU LIKE TO COMPUTE AGAIN? Y/N"
390 GETA$:IFA$=""THEN390
400 IFA$<>"Y"ANDA$<>"N"THEN380
410 IFA$="Y"THENGOTO5
420 IFA$="N"THENPRINT"□":END
```

STEPPED LOOP ANTENNA

On the lower frequency amateur bands, particularly 160 and 80 metres vertical polarisation is often desirable, but usually difficult and expensive to obtain.

Bruce Hannaford VK5XI
57 Haydown Road, Elizabeth Grove, SA. 5112



A large horizontal loop antenna is a good all band antenna but certainly lacks in vertical polarisation as needed on these bands. To a considerable degree the stepped loop corrects this deficiency and this stepped design could also be applied with advantage to horizontal dipoles as well. For additional general information regarding the horizontal loop antenna see Amateur Radio, December 1984, but correct two measurements shown in the first column, 28 metres should be 18.2 metres and 112 metres should be 73 metres.

The stepped loop is based on the idea that even a very short vertical section in a high current, high radiation portion of an antenna will give a considerable amount of vertically polarised signal. Actually, in any vertically polarised antenna there is not much point in keeping the low current, low radiation portion going straight up often at great expense. This is born out by T and L type antennas where much of the low current portion is horizontal. It is also clear that even a small vertical section can be very useful when we consider loaded vertical whips often only a metre or two in length.

Now for some basic facts about large horizontal loops. The loop is normally a full wave-length on the lowest frequency band to be used. The length required is roughly equal to a wave-length in space (no end effect). Metres length = 300 divided by frequency in MHz. The loop will give a fairly low impedance feed point on *all* multiples of its fundamental full wave frequency. At the fundamental, the impedance will be about 100 ohms and as the harmonic number is raised the impedance will become higher until it is about 200 ohms at the eighth harmonic. The vertical radiation pattern of a purely horizontal loop (no steps) is largely straight up at its fundamental frequency but as higher harmonics are used this vertical angle becomes lower. The horizontal radiation pattern when the loop is fairly close to the ground gives good all round coverage. The shape of the loop is not very important so long as a large area is enclosed, a circle would be ideal, a square is a good reasonably close compromise that needs only four poles to support it. Great heights are not needed and if used tend to make the horizontal radiation pattern break up into lobes instead of being omni-directional. I have heard of the loop being used with good results only about a metre above ground, however I recommend enough height to be reasonably clear of any obstructions. The loop is a broadly resonant antenna which is also very useful. The loop usually gives a noise reduction when compared to horizontal dipoles. Apparently, the noise is largely shorted out in the loop.

Looking at the diagram of the square stepped loop, it will be noticed that the feed point is in the centre of one of the vertical sections and this is the best point for it. However, the bottom of the vertical section is a more convenient position and can be used if the maximum of vertical polarisation is not used. As the poles form a square they are in the correct positions to support vertical sections that will be at current maximum points. At the fundamental, full wave frequency, just as in any full wave antenna, there will be two current maximum points a half wave apart. In our case, at the feed point and in the opposite vertical section. On the second harmonic (x 2 frequency). There are two wave lengths in the loop and four current maximums, one occurring in each vertical section. As higher harmonics are used, some current maximums will occur in the more or less horizontal parts of the loop, however, in all cases, four of the maximums will be in the vertical sections. This means the maximum of vertically polarised signal will occur in the lowest frequency bands and the least in the highest frequency bands, which is the way we would want it anyhow. If an ideal square shape is not possible at your location you can make do with two or even one vertical section and still gain some advantage. Remember that the feed point and the opposite part of the loop are always current maximums. Current maximums are located by measuring along the wire from the feed point and not across the ground, a good point to remember if your loop is not perfectly square.

The height of the vertical sections depends on your pole height and clearance from obstructions and also on how much vertical polarisation you want, there is no magic figure. If you use large vertical sections, the horizontal sections will, of course, be reduced in length and the loop will have a smaller enclosed area. Carried to extremes, this will reduce efficiency. For an 80 metre fundamental loop I suggest at least one metre and up to about three metres in each vertical section. Of course, the stepped loop will require somewhat less ground area which can be very useful in many cases.

To tune the loop, a dip meter reading is taken at the feed point and the most convenient pruning method is to change the length of the vertical sections slightly, leaving the horizontal sections and pole positions unchanged. Check not only the fundamental, nut also the harmonics of interest, prune for best average results.

There are a number of options regarding feeding the loop. An open wire or 300 ohm feeder can be used with a balanced ATU. A 4:1 balun can be located at the feed point and then 50 ohm coaxial cable run to an ATU and the transceiver. Use a high power balun as the SWR may be fairly high on some bands.

Or the Antenna Matching Unit (AMU) described in *The Feeder Tuned Antenna* article in Amateur Radio, November 1985, could also be used.

The loop may be earthed at the mid-point of a balanced feeder system or at the mid-point of the vertical opposite the feed point. The above two methods give a balanced system but good results can also be obtained using unbalanced systems such as feeding the antenna with coaxial cable, the shield of which is earthed. The SWR will be much higher than with a 4:1 balun but most ATUs will manage it quite well. The balanced system is probably preferable but I have not been able to detect any difference in signal strength or received noise level with any of these methods at this location.

The poles used should preferably be wood or metal with added wooden tops so the vertical sections are not parallel to and close to metal masts. I am using the latter but the wood sections are not long enough to accommodate all the vertical radiator section lengths so a short horizontal wooden arm has been added to the metal pole to space the bottom end of the vertical wire well away from the metal pole. I have used two egg insulators at the top and bottom of each vertical section of the antenna to support the loop.

I have been experimenting using this loop on 160 metres and getting promising results. On 160, the loop is a half wave long with a high impedance feed point and one current maximum opposite the feed point. The loop can be fed with one feed point earthed and the other connected to a random wire type ATU. As a current maximum occurs in the vertical section opposite the feed point, a fair amount of vertical polarisation occurs and although one side of the feed position is earthed, this carries very little RF current and no earth mat etc is needed. The best method I have used so far has been to series tune the loop with a capacitor and 1:1 balun in series then a 50 ohm coaxial cable to the transceiver. As I said, the results are quite good, both on receive and transmit and the system is well worth further investigation.

In conclusion, I am sure this stepped loop system is a good answer for those who need a good all-band antenna, horizontal loop antennas are worthy of much more attention than they presently receive. I would be interested to receive feedback re the stepped loop especially concerning its reduced noise pick up performance.

ar

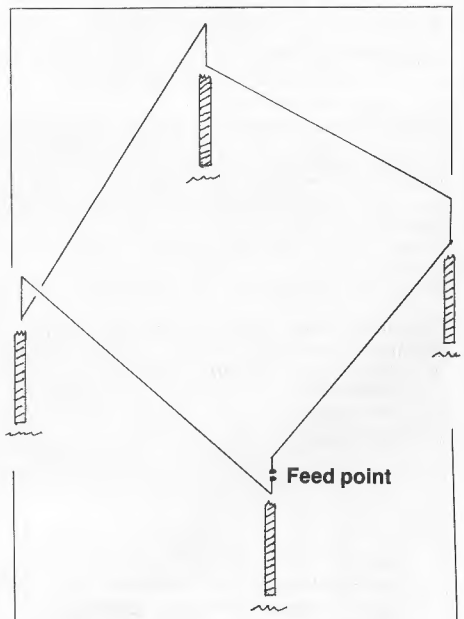


Figure 1 — Stepped Loop Antenna.

For simplicity sake tops of poles are not shown.

EMISSION MODES — What they mean

Peter O'Connell VK2EMU
3A Algernon Street, Oatley, NSW. 2223

Everyone knows (or should know) what AM, FM, CW, SSB etc means, but now emission modes are listed as a series of numbers and letters.

A look at page 115 of the recent Call Book lists the emission modes for the amateur radio service in groups of mixed numbers and letters. At first glance, the codes appear to be very complicated, but on a closer study it is easy to understand. Each code group has either seven or nine digits.
— eg 6K00A2B, 4K00A3EKN, 36K0F3E, 11M0A3FMN.

The first thing we need to do is to split the code groups into two or three sub-groups. The seven digit codes are split into two sub-groups, while the nine digit codes are split into three sub-groups.
— eg 6K00 A2B 4K00 A 3E KN

The first sub-group contains four digits — three numbers and one letter.
— eg 200H 6K00 6M25.

This sub-group gives details of the bandwidth of the mode. The only letters used in the amateur service are H, K and M; which stand for Hertz, Kilohertz and Megahertz and occupies the position of the decimal place.
— eg 200H = 200Hz, 6K00 = 6kHz, 6M25 = 6.25MHz etc. (See Table 1 for full list).

The second sub-group contains three digits — two letters and one number.
— eg A1A A3E H3C J3C

The first digit, a letter determines the type of modulation of the carrier.
A = Amplitude modulated carrier — double sideband.
H = Amplitude modulated carrier — single sideband full carrier.
J = Amplitude modulated carrier — single sideband suppressed carrier.
(See Table 2 for full list).

The second digit, a number determines the nature of the modulating signal.
1 = Single channel digital information without modulating sub-carrier.
3 = Single channel containing analogue information.
(See Table 3 for full list).

The third digit, a letter determines the type of information being transmitted.
A = Telegraphy — for aural reception.
C = Facsimile.
E = Telephony.
(See Table 4 for full list).

The last sub-group contains only two digits, both letters. This sub-group provides additional information to describe the mode.
— eg KN MN NN.

The first letter defines details of the signal.
K = Sound of Commercial quality with the use of frequency inversion or band-splitting.
M = Monochrome (Television).
N = Colour (Television).

The second letter defines the nature of the multiplexing.
N = None (Amateurs are not permitted any multiplexing of signals).

So we can see that by looking at the appropriate tables, it is to determine the type of emission specified. I will work through a couple of examples.

Example 1: 8K00A3E
Bandwidth = 8 kHz
A = Amplitude modulated main carrier with double sidebands
3 = Single channel containing analogue information
E = Telephony
Therefore 8K00A3E = AM Voice Transmission with Bandwidth of 8 kHz.

Example 2: 36K0F3E
Bandwidth = 36 kHz
F = Frequency Modulated Carrier
3 = Single channel containing analogue information
E = Telephony
Therefore 36K0F3E = FM Voice Transmission with Bandwidth of 36 kHz.

Example 3: 30M0F3FMN
Bandwidth = 30 MHz
F = Frequency Modulated Carrier
3 = Single channel containing analogue information
F = Television (Video)
M = Monochrome (B & W)
N = No multiplexing
Therefore 30M0F3FMN = FM Black and White Television Signal with no multiplexing and Bandwidth of 30 MHz.

TABLE 1 — BANDWIDTH OF EMISSION
200H = 200 Hz; 1K12 = 1.12 kHz; 2K00 = 2.00 kHz; 3K00 = 3.00 kHz; 4K00 = 4.00 kHz; 6K00 = 6.00 kHz; 8K00 = 8.00 kHz; 16K0 = 16.0 kHz; 36K0 = 36.0 kHz; 750K = 750 kHz; 6M25 = 6.25 MHz; 11M0 = 11.0 MHz; 30M0 = 30.0 MHz.

TABLE 2 — FIRST SYMBOL: Type of modulation of the main carrier.
N Emission of an unmodulated carrier.
A Amplitude modulated carrier — double sideband.
H Amplitude modulated carrier — single sideband full carrier.
R Amplitude modulated carrier — single sideband with reduced or variable level carrier.
J Amplitude modulated carrier — single sideband with suppressed carrier.
B Amplitude modulated carrier — independent sideband.
C Amplitude modulated carrier — vestigial sideband.
F Angle modulated carrier — frequency modulation.
G Angle modulated carrier — phase modulation.
P Series of pulses — no modulation.
K Series of pulses — modulation in amplitude.
L Series of pulses — modulation in width/duration.
M Series of pulses — modulated in position/phase.

TABLE 3 - SECOND SYMBOL: Type of signal modulating the main carrier.
0 No modulating signal.
1 A single channel containing quantised or digital information without the use of as modulating sub-carrier.
2 A single channel containing quantised or digital information with the use of a modulating sub-carrier.
3 A single channel containing analogue information.
8 Two or more channels containing analogue information.

TABLE 4 — THIRD SYMBOL: Type of information to be transmitted.
N No information transmitted.
A Telegraphy — for aural reception.
B Telegraphy — for automatic reception.
C Facsimile.
D Data transmission, telemetry, telecommand.
E Telephony.
F Television.
W Combination of the above.

TABLE 5 — LAST SUB-GROUP: Additional information.
KN Sound of commercial quality with the use of frequency inversion or band-splitting — with no multiplexing.
MN Monochrome (Television) — with no multiplexing.
NN Colour (Television) — with no multiplexing.

NOTE: The lists above only include mainly information pertaining to the amateur radio service.

PUBLICATION OF COMPUTER PROGRAMS

Part of the technical editing of computer programs involves running the program. This has meant re-typing it from a listing supplied from the author. Many hours are spent by the editors entering the program, especially if, as does often occur, syntactical errors are introduced.

In future, to overcome this hold-up, alternative forms of program entry may be required, eg cassette, disk or via a modem. This will enable quick editing. If we do require the program in one of these alternative forms, we will provide the blank cassette, disc, etc or make the telephone call in the case of modems.

Finally, a word of advice. Computer programs on their own do not make good articles. Please include with any program a description of your algorithm. Articles are much more interesting when they include, not just a description of the *how* but also the *why*.

STABLE VFO WITH DIGITAL READ-OUT

Morris Odell VK3DOC
84 Hill Road, North Balwyn, Vic. 3104

Morris has been very satisfied with his home-brewed VFO for a number of years and the February editorial inspired him to take the time to share it with the readers of Amateur Radio.

This design for a stable VFO is an old one, used by the writer for many years. It may not be as sophisticated as modern designs but it performs well and has been used for a long time at the head of a 18X multiplier for two metres with excellent long-term stability. The frequency readout is also old-fashioned by todays standards, but has the advantage, in my case, of being built from junk-box components and thus cost virtually nothing.

The construction of a good VFO is a demanding bit of home-brewing, requiring more care and attention to detail than most other projects. Of course, the satisfaction resulting from a successful project is a great reward and has to be experienced to be believed.

DESIGN CONSIDERATIONS

Any VFO must be constructed according to a few basic principles in order to get maximum performance in terms of frequency stability and spectral purity. The following are a few points that will be found useful:

** The frequency determining elements of the oscillator must be kept as free as possible from variation due to thermal factors. In practice, this means avoiding ferrite cores, plastic capacitors and varactor tuning. PCBs should be single-sided and of high quality. Tuning capacitors are definitely* **not** *the place to economise, they should be the best available and made of Invar if possible, with ceramic insulation. Such capacitors are not easy to find but are worth searching for. The advertisements in British and US magazines are worth searching as a starting point. Coil formers should be ceramic and silver plated coils and capacitors from disposals sources are often of excellent quality.*

** Mechanical rigidity is just as important. The VFO should be mounted in a sealed diecast box, preferably on a heavy chassis and with good quality dial drive mechanism. Again, these are not easy to find but are worth the search. Wiring of the tuned circuit should be in heavy copper wire, keeping lead lengths as short as possible and using ceramic stand-off insulators if required.*

** The VFO should be well away from heat producing gear such as transmitters. Some commercial designs even have it in a thermostatically controlled box, but unless you are rather obsessive, this is going a bit far (although surprisingly easy to do).*

** The power supply to the oscillator should be regulated and as stable as possible. The use of batteries is not as impractical as it sounds.*

** The oscillator should be operated at as low and stable a power level as possible to avoid thermal effects in the tuned network. The active device/s should load the tuned circuit as little as possible and should be isolated from it also to avoid unpredictable detuning effects. The loaded Q of the frequency determining network must be as high as possible. Low L/C ratios can help here.*

** The oscillator should be followed by one or more buffer stages in order to keep its operating conditions stable. These can be untuned but some form of bandpass characteristics is usually incorporated (in the later stages at least).*

** While digital frequency readout is an attractive feature, bear in mind that digital circuitry is a potent noise source. The readout logic should be in a well shielded enclosure and supplied with DC from a separate source. If the VFO is being used for a sensitive receiver, it should be possible to turn off the digital circuitry while searching for very weak signals. The signal for the frequency counter should be taken from a point in the buffer chain as far along as possible from the actual oscillator.*

THE VFO CIRCUIT

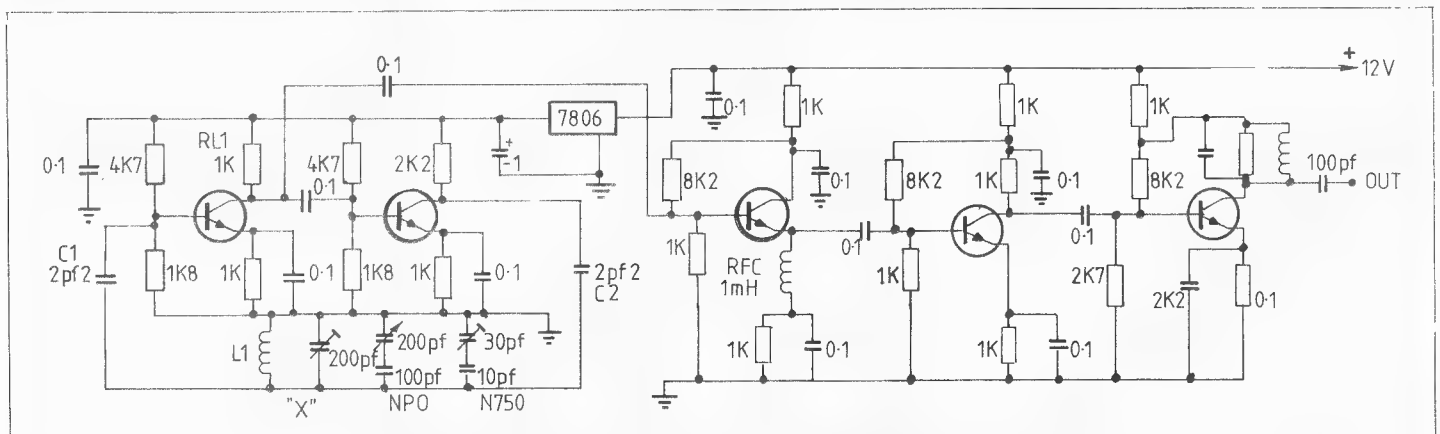
This VFO was built to cover the range 7.460 to 7.571MHz. I used a disposals *Command* transmitter as the chassis as the Command's tuning circuitry includes most of the features mentioned above. The tuned circuit is in a sealed box and is connected by a short piece of heavy gauge copper wire to the oscillator circuit in another sealed box. The iron dust slug in the original coil has been removed but the padding and trimming capacitors retained to adjust the tuning range. A small N750 ceramic capacitor has been included with an air-trimmer to couple it to the tuned circuit for fine adjustment of temperature drift. The VFO is battery operated and a couple of lantern size batteries last for over 100 hours.

The oscillator circuit I have used is the Franklin oscillator. This was quite popular in the days of valves as it is well suited to their input characteristics. I have found it to work well with bipolar transistors and have no reason to doubt its performance with FETs also. The circuit is basically a two stage amplifier with positive feedback arranged to include a loosely coupled tuned circuit. Although the circuit resembles a cross coupled astable, it will not work in this mode as the loop gain is too low. It is the Q of the tuning network that lifts the loop gain to the point of oscillation at the desired frequency only. In practice, the capacitors C1 and C2 should be of the same value and as low as possible consistent with sustained oscillation and reliable starting. I have found values of one or two pica-farad to be optimal and the amplifier gain can be adjusted by varying RL1 (not with a pot! !) to suit. Because of the low loading of the tuned circuit, point **X** is at high impedance and should be treated accordingly.

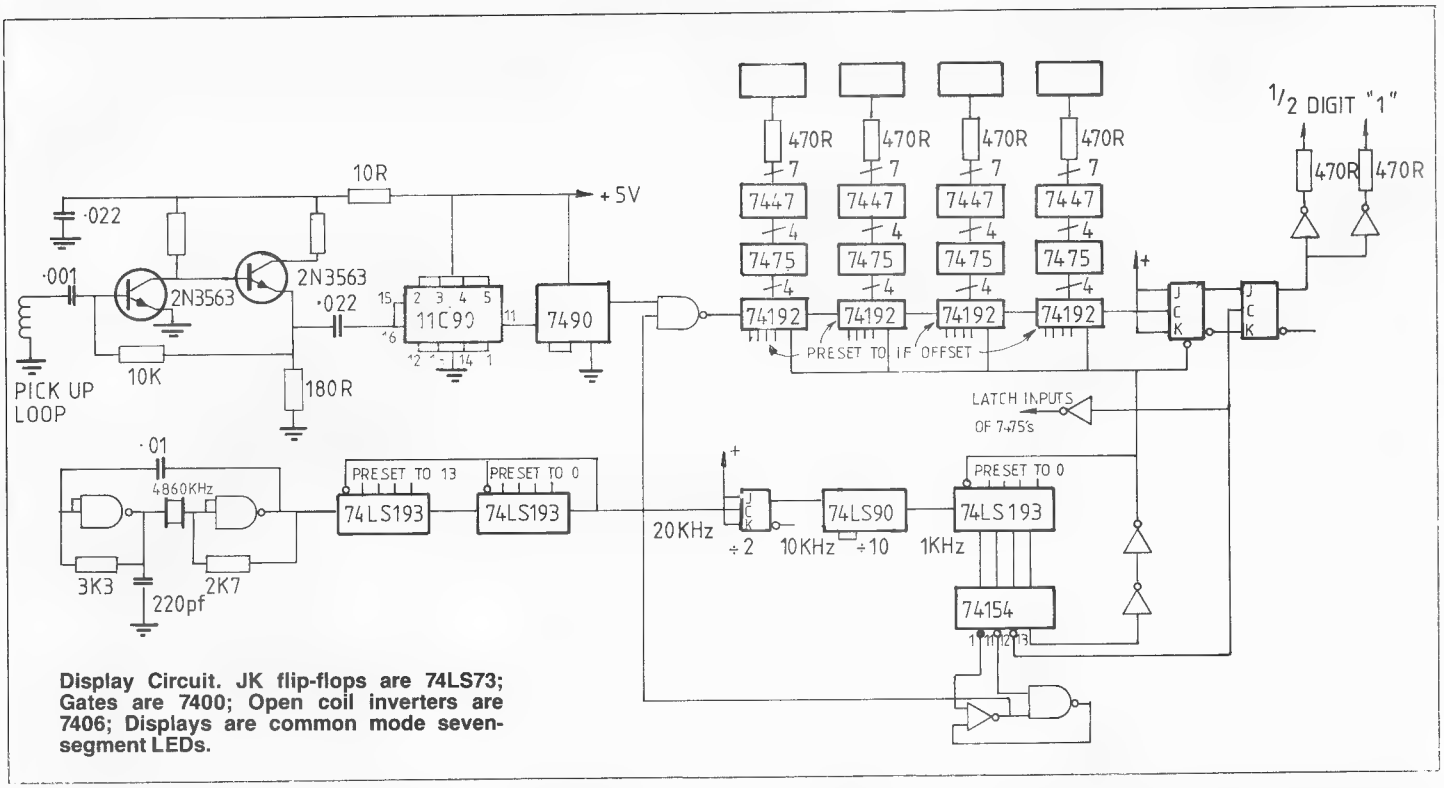
I have always tended to use low impedance practice with transistorised Franklin oscillators mainly in order to swamp any variation in device characteristics. It also reduces the likelihood of parasitic oscillations. Oscillator output is taken from the intermediate coupling point via an emitter (or source) follower and then through a two-stage buffer. This arrangement is open to change to suit a particular need. The tank for the final stage is a small air-wound coil in my VFO, but a ferrite toroid would also be suitable here.

THE FREQUENCY COUNTER

Because the VFO is used with a multiplier, there is no point in measuring its output frequency directly. Output was taken from the final multiplier via a small loop and preamplifier and then fed to a divide by 100 prescaler. The counter proper is a straight-forward design using TTL logic. The counter chain uses presettable counters in order to enter IF shifts for receive operation. The final *half-digit* is counted with a JK flip-flop, the other FF in the package serving as a latch. Count time is 10 milliseconds and the data is then latched into



VFO Circuit. All transistors are 2N3563.



Display Circuit. JK flip-flops are 74LS73; Gates are 7400; Open coil inverters are 7406; Displays are common mode seven-segment LEDs.

the display. Timing is derived from a junk-box crystal on 4.860MHz, which is divided by 243 to give 20kHz and then by 20 to 1kHz for the control section. The display updates at about 70Hz and is therefore flicker free.

PERFORMANCE

The VFO has been checked against a properly warmed-up Hewlett Packard 524B counter and was found to vary less than 5Hz over 12 hours of continuous operation at 7.500MHz. The stability of my clock crystal in the frequency counter was not as good as this, although variation was not seen on the display because the short counting time gave only 100Hz resolution.

Harmonics were not able to be measured directly due to lack of suitable equipment, but were well down when tuned in on a communications receiver up to 30MHz.

This article is intended more as a guideline than a specific constructional project. Armed with the basics, construction of high quality home-brew VFOs is a lot of fun and very rewarding and I hope anyone attempting it will get as much enjoyment from it as I have.

REFERENCE: *Solid State Design for the Radio Amateur.* ARRL 1977.

SEEING HALLEY'S COMET THE SECOND TIME

Further to the article *Halley's Comet - will we see it?* (p5 April AR), it was requested that if anyone reading the article and seeing the Comet for the second time, to please contact the writer. Four readers of AR did and their letters are reproduced in part.

The first was from Mrs C R Ferris and reads — *"I am the mother of VK3BUN and seeing your note in Amateur Radio re Halley's Comet prompted me to write.*

"I saw Halley's Comet in 1910 and twice this time, once when the tail was not visible in the north and this time when the tail is visible in the eastern sky.

"As far as I can remember in 1910, the tail was finer, more like a cats tail."

The second report was from Lindsay VK2EI, *". . . I observed Halley's Comet in 1910, practically every day from the time it appeared until it disappeared.*

"I was in the country at the time and in those days there was no electric lights and no pollution, as cars at that time were a novelty, also I had better eyesight as I was 15 years of age. I am now 91, so you could say I am getting on in years.

"Halley's was certainly worth seeing in 1910, it kept getting bigger and brighter each morning before daylight, until it changed over to the night sky. It was then at its best with the head a few degrees above the horizon and the three tails, yes definitely three, reaching up to the zenith.

"I have seen the Comet this time with binoculars, and I must say that it is very disappointing. I have my camera ready hoping to get a picture of it.

"I also viewed quite a large Comet in either 1900 or 1901, but no one seems to know about it . . ."

The third letter came from Frank VK3FC and reads *". . . I have had a small telescope for years, given to me by the kids and on this return of the Comet, it has come in handy.*

"I found that the sighting did not work out quite as anticipated by the prediction. Before the last phases of the moon, in March, I could pick it up by ordinary eyesight and at a nice angle at 5 am. From about 6th of April and onwards it has got weaker and much harder to locate contrary to expectations.

"I have hazy recollections of seeing it in 1910 as a kid of seven years of age, the big awesome thing in the sky. This was at Clunes in Victoria. Of course, I am 82 years of age . . ."

The fourth letter is from Ray VK3RJ. Ray comments: *"I had the loan of a fairly good pair of binoculars from 18th to 27th April, but due to a frustrating sequence of overcast night skies, I was afraid I was going to miss out. However, on 24th, the night sky was absolutely clear and enabled me to locate the constellation CORVUS* and the Comet. I also had a splendid view of the eclipse of the moon.

"The Comet sighting was not a patch as a spectacle, on the sightings (four) I had witnessed with the naked eye as a boy of 10 years of age, from Maryborough (Vic) in 1910. The Comet was then side-on and three times closer to the earth.

"So, I have joined the fortunate minority who have witnessed two orbits.

"I was born on 30th January 1900."

Thank you one and all for your contributions to my request and if someone reading this can assist Lindsay, it would be appreciated if they could contact him direct at his QTHR.

Contributed by Ken McLachlan VK3AH

NEWS FROM FRANCE

The Reseau des Emetteurs Francais, via F8BO, advises the following change of address for the French QSL Bureau.

Cards should be sent to *REF QSL, BP 273, F-81209, Mazamet. Cedex.*

Call signs in France are TK; FG; FH; FK; FM; FO; FP; FR; FY and FT. Radio clubs are issued with FF prefixes.

Numerals are designated in licence class — 1 for Class A; 2 for Class B; 3 for Class C; 4 for Class D and 5 for Class E.

Class A licensees may use 144MHz phone and 20 watts; B may use 28.400-29.000MHz and 144MHz phone with 20 watts and 20 watts CW on 7.020-7.040, 14.050-14.100, 21.050-21.150, 28.000-28.100 and 144.050-144.090MHz.

Class C may use 144MHz and 100 watts whilst Class D may use 100 watts CW on all bands, all modes. Class E can use 250 watts, all bands, all modes.

BUT IS IT STEREO?

The Victorian Consumer Affairs Ministry has been concerned about the public buying radios and wrongly thinking they will receive AM-stereo broadcasts.

It has been found that many radios labelled *'AM/STEREO FM'* were bought on the assumption that both AM and FM stereo reception was available.

Consumers need to be very careful and make sure that they are getting what they want.

The Ministry has been negotiating with manufacturers and retailers to see if a much clearer way of labelling is possible. One suggestion was that radios able to receive both AM and FM stereo be labeled *"STEREO AM/FM"* and those receiving FM stereo only be marked *"AM WITH FM STEREO"*.

HOME-BREW EXTERNAL VFO FOR FT 707

Ray Dobson VK5DI
16 Howden Road, Fulham, SA. 5024

A slow response to a request for information about a ready made VFO and two recent articles in magazines prompted this writer to attempt to make his own.

A careful and detailed study of the relevant circuit diagrams of the FT-707 revealed the "trade secret of the external VFO switching, namely, the unmarked switch near the *EXT VFO* socket on the FT-707 connection diagram which is operated automatically when the *EXT VFO* plug is plugged in. *This switch cannot be operated manually* — it is operated only when the *EXT VFO* is plugged in for use. Unplug the *EXT VFO* and the transceiver reverts to single (internal) VFO operation only. *(see Figure 5).*

A study of the circuit diagram of the FV-107 (external VFO for the FT-107) revealed how the *INT/EXT VFO, TX/RX, CLARIFIER,* etc switching was carried out.

The VFO (5.0 to 5.5 MHz) circuit used is shown if Figure 1 and is virtually a copy of the internal VFO of the FT-707 — the only difference being the provision of the +8V for the switching via the *INT/EXT* switch to enable either the *EXT VFO,* or the *INT VFO* via a return to Pin 5 of the *EXT VFO* socket (this +8V is disconnected from Pin 5 when the "trade secret" switch operated).

The art work for the PCB, viewed from the component side, is shown actual size in Figure 2.

The component layout is shown in Figure 3. This layout and associated PCB is not critical and variations can be made to accommodate the different sizes and shapes of the components that come to hand.

The control circuitry is shown in Figure 4 and as stated above was adapted from the FV-107 circuit diagram.

The numerous capacitors of various types in the oscillator tuned circuit area may be questioned. However, although they are not absolutely necessary, they are there for some very good reasons, eg temperature compensation, frequency range, linearity, etc. The sum of these capacitors is variable from

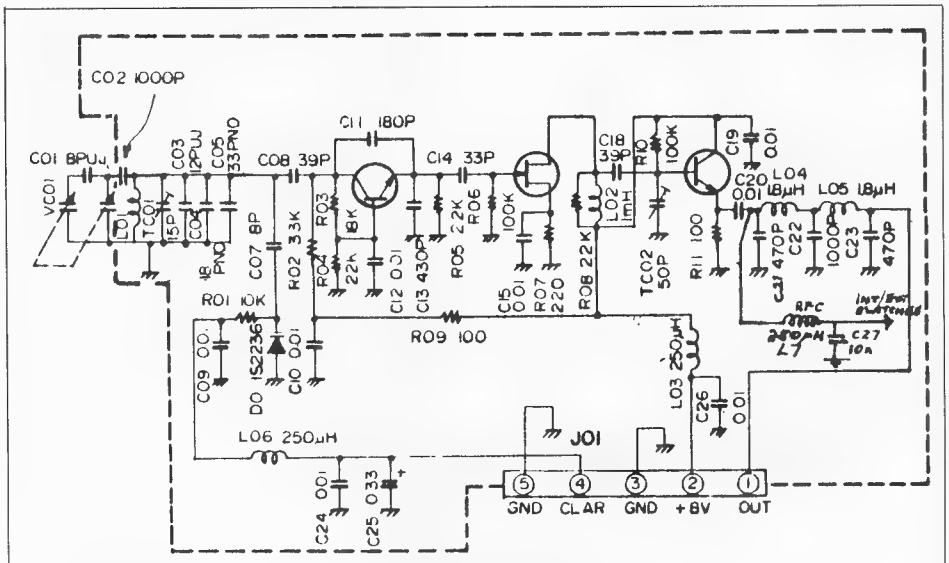
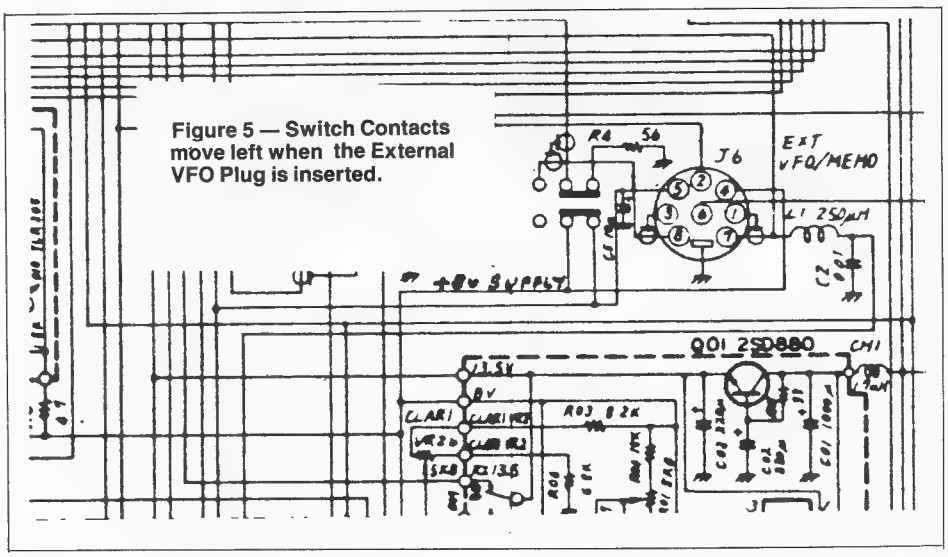


Figure 1 — VFO CCT Diagram



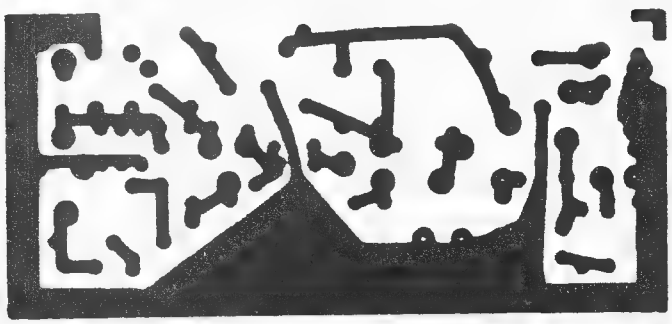


Figure 2 — Printed Circuit Board *viewed from the component side.*

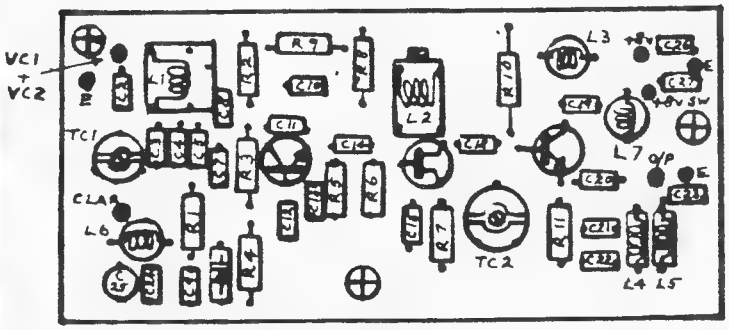


Figure 3 — Component Layout.

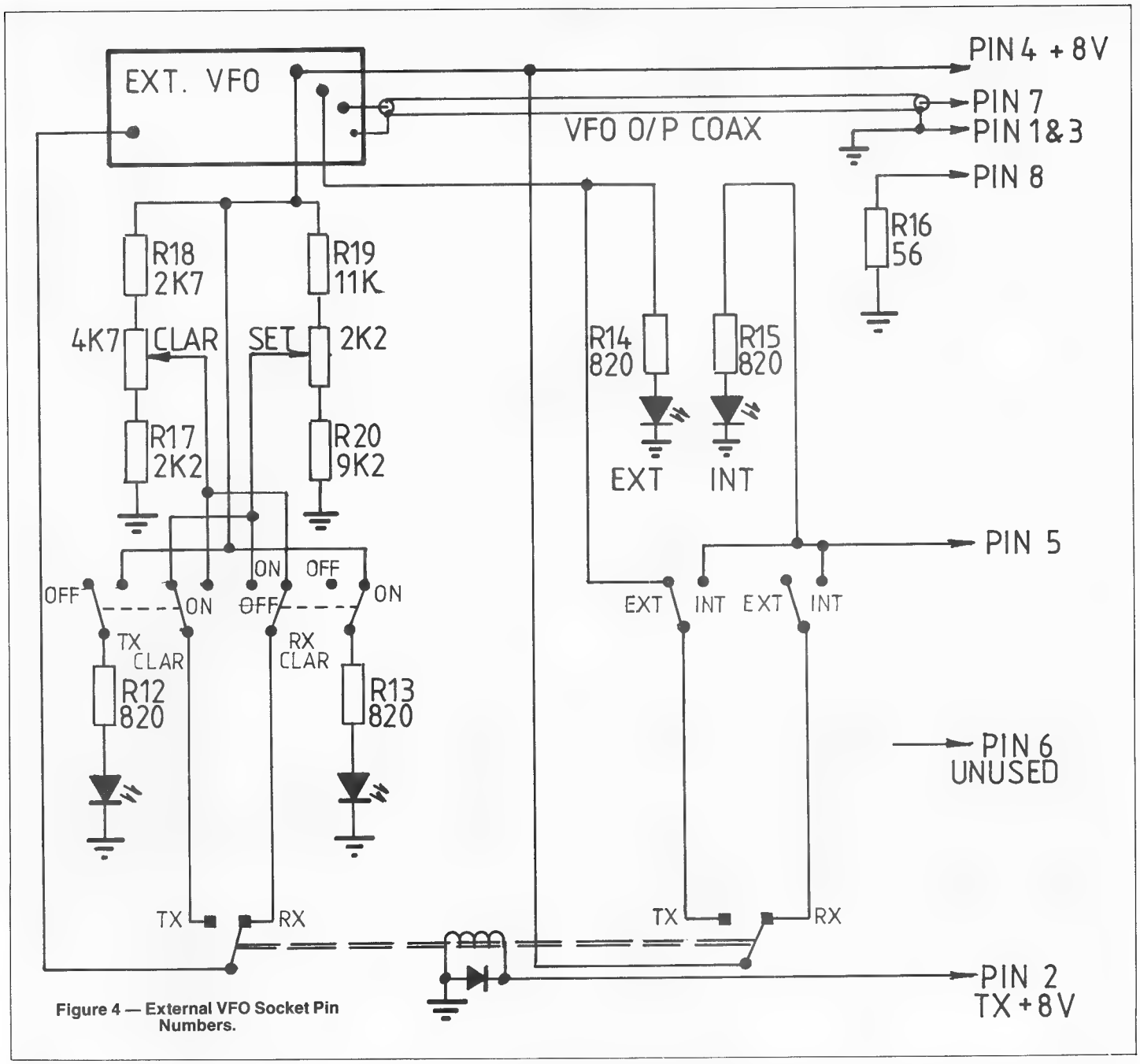


Figure 4 — External VFO Socket Pin Numbers.

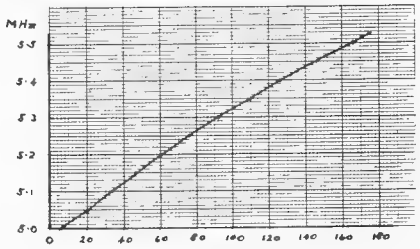


Figure 6 — Dial Reading.

about 85pF to 105pF and with the coil having a value of 9.5μH to 10.0μH, the circuit can be made to tune the range 5.000 MHz to 5.500 MHz. Figure 6 shows the plot of Frequency versus Dial Degrees of the prototype, and although it is not exactly linear, it is reasonably close. Due to the capacitor and coil variations the usual adjustment of the trimmer capacitor and the ferrite slug must be carried out to achieve the desired coverage.

The operation of the external and internal VFOs with the FT-707 circuitry is shown in Figure 7.

AR

PARTS LIST

Capacitors (pF)

1	8 C1#
1	8 C7#
1	12 C3#
1	18 C4#
2	33 C5#, 14
2	39 C8, 18
1	180 C11
1	430 C13
2	470 C21, 23
2	1n C2, 22
9	10n C9, 10, 12, 15, 19, 20, 24, 26, 27
1	.33μF (tant) C25
1	Varicap*
1	15pF trimmer TC1
1	50pF trimmer TC2
1	15 x 15pF tuning VC1 + VC2

Resistors (Ω)

1	56 R16
2	100 R9, 11
1	220 R7
4	820 R12, 13, 14, 15
3	2k2 R5, 8, 17*
1	2k7 R18*
1	3k3 R2
1	9k2 R20*
1	10k R1
1	11k R19*
1	18k R3
1	22k R4
2	100k R6, 10
1	2k2 pot*

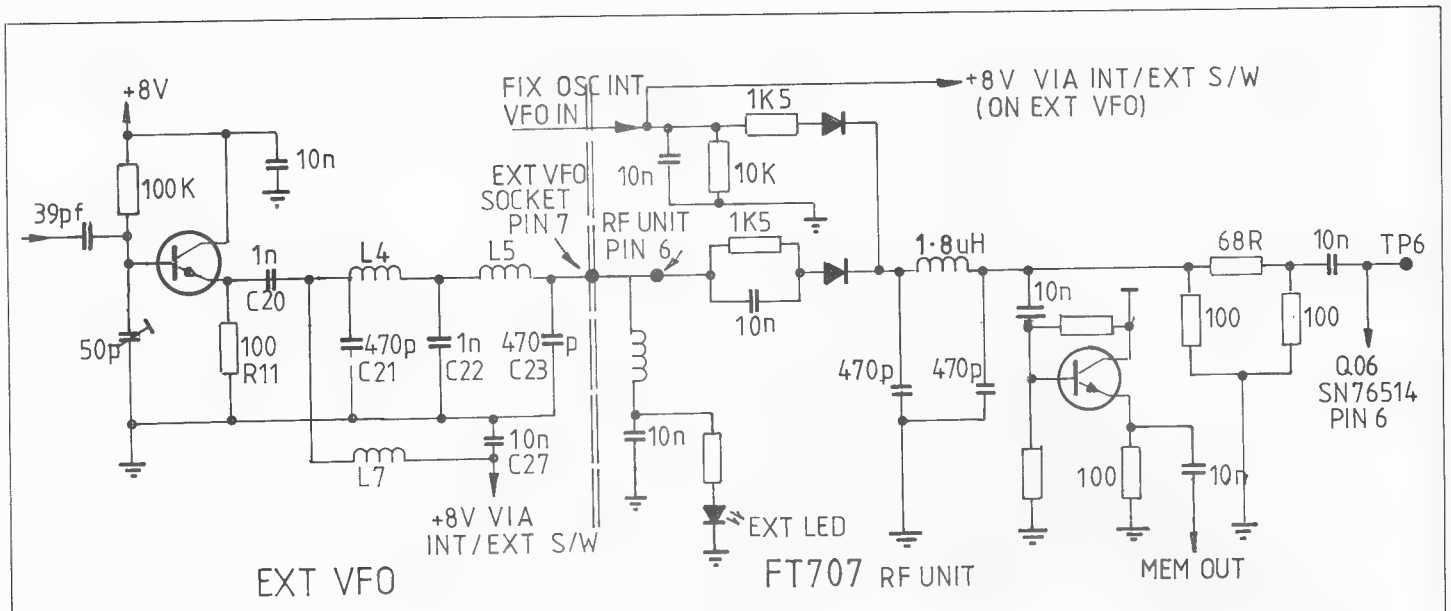


Figure 7.

1 4k7 pot*

Semi-Conductors

1 2SK19GR (MPF 102, BC245, or similar FET)
2 2SC1815Y (BFX20, BC548, or similar NPN)
4 LEDs

Inductors

1 Osc Coil L1, 5mm ID x 25mm (36t 0.5mm wire)
2 RFC 1.8μH L4, L5
3 RFC 250μH (not critical < 390μH) L3, L6, L7
1 RFC 1mH L2

* — Value depends upon how much Clarifier action is required.
# — Temperature Coefficient chosen for frequency stability.

1 8-pin Yaesu Plug (for EXT VFO socket)
1 Metal Box (preferably cast-Aluminium
1 Relay (2-pole change-over)
2 Switch (1-pole change-over
2 Switch (2-pole change-over)
1 Slow-motion Dial
1 Knob for Clarifier control

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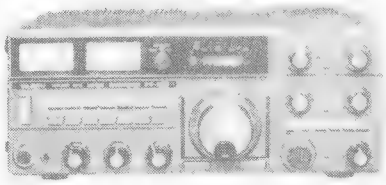

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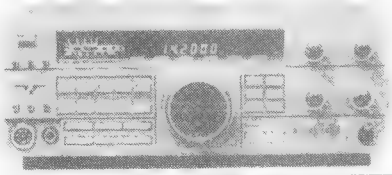

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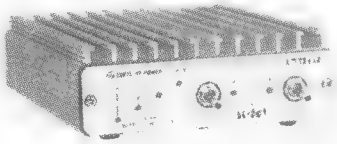

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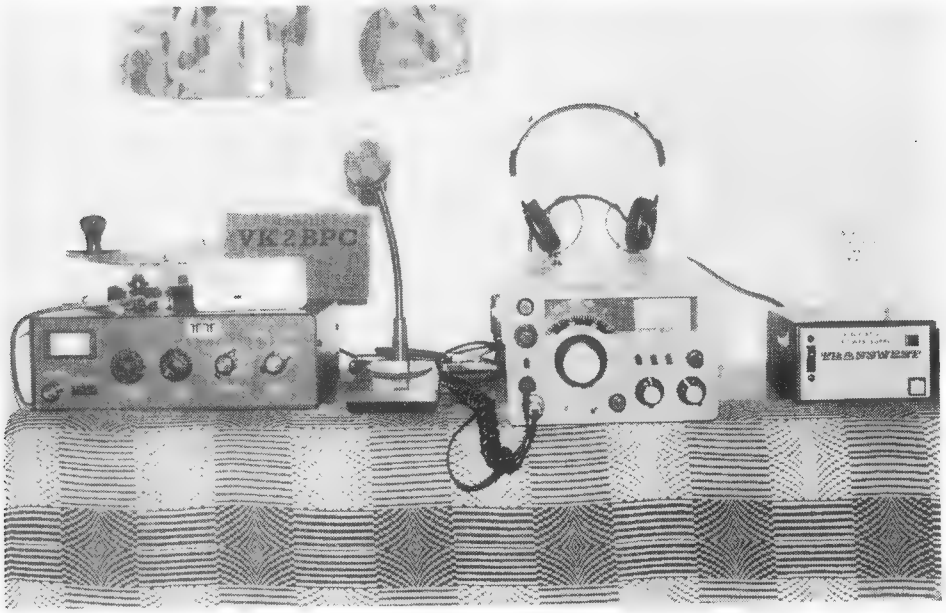
With the question in our minds as to where to go for our forth-coming annual holidays, the thought occurred to my wife and I that maybe some far-flung green fields might be interesting. After all, it was many years since any extensive holiday had been undertaken, and some exotic overseas port seemed to be calling!



The VK2BPC Portable QRP Station.

After initial inquiries at the local tourist bureau, we quickly came to the realisation, that with the state of the Australian Dollar, it was almost prohibitive for the average family with three children to travel overseas and still live in peace with ones bank manager.

The alternatives didn't seem to have the same glamour about them until Norfolk Island came into the conversation. After all, it had been almost 15 years since we had been there and the children had never been. Another benefit was the fact that it was a domestic flight, which would make it cheaper for family travel. It was also my wife's homeland of childhood days so it would be interesting to catch up with all the relatives, friends and acquaintances, and see how things had changed since 1971. There was also one other thing (for me as a keen amateur) to help swing the vote in favour of Norfolk — the DX location!

So, the location has been decided, enter the next problem. How do you decide what to take on an aircraft in the form of radio equipment, when carrying luggage for five? Well, after much deliberation, it was finally decided that any fool could work the world with 100 watts plus and a VK9-prefix, so why not do it the hard way on QRP. With loving care the trusty little 10 watts, SS105S was packed, along with a 40 metre dipole, ATU, desk microphone, CW key, six amp power supply and sundry bits and pieces.

Just two and a half hours out of Sydney on a comfortable Fokker F28 jet, (A far cry from the five hour flight on the old DC4 Skymaster), we were preparing for touch-down onto the familiar volcanic soil once again, whilst attempting to show the children some landmarks we recognised.

Once through Customs we were met by Uncle-in-law, who whisked family and luggage away in an old Volvo, to our shack which would be home for the next four-weeks. Of course, (in true amateur spirit) upon entering the drive-way, I couldn't help surveying the local flora in an effort to gauge the height of the Norfolk Island Pines surrounding the house. One *little beauty* just outside the shack window, that rose to about a height of about 25 metres could most surely be the hanger for the 40 metre dipole — but that would have to wait until we had been to the local shop to stock up the larder: even amateurs have to eat!

There had been some speculation from amateur friends back at my home QTH as to how long it would take for me to get on air. Well, on arriving back from the shop it was straight to the most important business and up the tree, to hang the centre of the dipole at about 18 metres and form it into an inverted vee. (If you like climbing trees I can certainly recommend the Norfolk Pine! It seems to have been designed specifically with amateurs in mind, as its branches are spaced just right for climbing, and it is very sturdy, into the bargain, which allows little or no swaying in the breeze).

Once inside the shack again with the gear ready to switch on, I thought I would try 15 metres as it was about the right time of day. Upon tuning around the band, the familiar sound of JAs seemed to be present so I decided to call one and test the effectiveness of the equipment. What I was about to experience will *always* be remembered! A VK2 call sign is not exactly a most sought after DX call and momentarily I had forgotten the significance of my location. After having successfully worked a couple of JAs, and within a very short period of time, it seemed as if half of Japan was trying to work me, all at once. I was suddenly on the receiving end of a *pile-up*. All

Les VK9NI and his wife Jean.

John VK9JA and his wife Florence.

was working well and reports on 15 metres were 5x3 to 5x7 — not too bad for low power, but a quick burst on 40 metres soon confirmed that I might make a contact back home on my first night — which did happen.

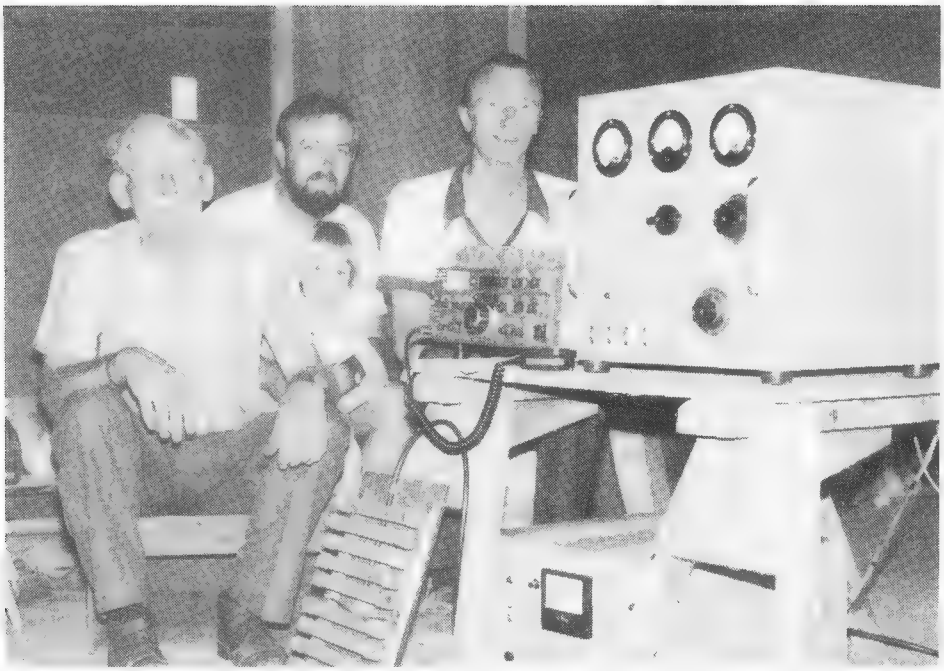
Of course, the trip was not all amateur as the family had to be considered too, so the DX work was confined mainly to the evenings when we were not going visiting, etc. As well as our own luggage, we were persuaded to take about 10 kg of QSL cards by the VK2 QSL Bureau, and one of the more interesting parts of the trip was meeting the recipients of these cards. Memories will long remain of the time spent with Bob VK9ND, Les VK9NI, John VK9JA, John VK9NJ, and all their wives. VK9NJ may be better known as VK2ANO, as John and his wife had decided to spend a holiday there at the same time as we had.

The shack of Bob VK9ND, was very popular with the DX-chasers, particularly when he and John VK9NJ were working two different bands — Bob on a TS520S and 20 metres, whilst John was on a TS830S and linear on 40 metres, downstairs in the garage. The linear was a home-brew variety, made by Bob, a most professional looking piece of equipment and a real credit to its creator.

The time spent with Les VK9NI and his wife Jean was very pleasant in their beautiful garden surroundings, and it was nice catching up with the people who had previously only been voices at the other end of a QSO.

If you think these people have it made living in a little 15 square mile Pacific DX Paradise, you are right! It certainly is a nice place to live.

Another face to visit was John VK9JA, the call sign of the longest standing amateur on the Island, and a longtime friend of my wife's family.



From left: Bob VK9ND, Phil VK2BPC with third harmonic, and John VK9NJ. Bob's new home-brew linear and power supply feature in the centre of the photograph, with the dummy load at the bottom centre.

This Ionospheric Receiving Station is one in the Australian Network and is located on Norfolk Island.

John admits to not being very active these days, but he can be heard each day at 2100 UTC, 14.315 MHz, on the Maritime Mobile Net, giving much appreciated weather details to the many yachtsmen who call in. John's time is mostly taken up with his two electronics shops, and showing films on the history of Norfolk and Pitcairn to the tourists, not to mention his activity with the Norfolk wildlife conservation program.

Being the VK2 QSL Bureau Manager gave me cause to discuss the problems faced by our VK9 friends with the constant flow of cards that make their way to them. We have to realise that these people are in a very sought-after DX location, (as I experienced, first hand), and to expect a return card to a VK2 or VK3 etc, via the bureau, without making arrangements during the QSO is asking a lot of them. Where as we have a hundred, or possibly two hundred cards pass through the system, the VK9s could count them in thousands, so it becomes a very expensive business for them. If you are after a card, why not use the general rule of rare DX locations and pop an IRC in with your card. I can assure you of a good return service. As can be appreciated, few, if any, VK9s really need a mainland VK card, but almost all are prepared to QSL with a little help.

Unfortunately, Jim and Kirsty, VK9NS and VK9NL, were away in New Guinea at the time of our holiday so we were not able to meet this time — hopefully next time!

With so many places to see and so many people to meet, it certainly didn't take long for the four weeks to pass, but I did manage to visit the local radio station. Broadcasting takes place from a small studio, not far from the main shopping area and goes to air on 93.900 MHz FM and 1.566 MHz AM (although the AM broadcast was temporarily suspended whilst a new AM stereo transmitter was being installed). This was of great interest to me as the Westlakes Amateur Radio Club, of which I am a member, was the first amateur radio club to become involved in an application for a community radio station licence.

Well, could I recommend a holiday on the magnificent island to a DX chaser? The answer is most definitely yes as not only will you have a great time on-air, but you will also meet a lot of interesting and friendly people and be able to catch up on a lot of Australian and Norfolk history. You may even find an odd bargain with the duty-free shopping!

With the holiday finished, a quick tally of the log indicated that 31 countries were worked, which was not bad for low power, dipole and spasmodic operation on 40 and 15 metres during a propagation low. Probably the /VK9N had something to do with it!

Of just as much interest as the DX to me though were the regular scheds to my many amateur friends back home who were enduring the hot Australian summer across the water.

QSP

ONLY NATIONAL UHF NETWORK

On 16th March 1986, SBS-TV became the Australia's first national UHF television network, which opened a new chapter of broadcasting in this country.

The date marked the network's expansion to Perth and Hobart, via AUSSAT, making SBS-TV accessible in all capital cities except Darwin. The signal will be transmitted across the metropolitan area in both cities on UHF, from a transmitter atop Mount Wellington in Hobart, and Mount Bickley in Perth. All programs will originate from Sydney.

It also launched a new line-up of programs including award-winning international films, excellent series and major new local productions.

Viewers in all areas have access to the network's Sydney studios via a national toll-free telephone number (008) 22 6322, costing only a local call fee.

The VL2NI Broadcast Studio with Kathy Lecren at the Controls.

AMATEUR RADIO IS CONTAGIOUS

A tribute to an Amateur Father from an Amateur Son

Rodney Gow VK2END
PO Box 105, Castle Hill, NSW. 2154

Some may think amateur radio a strange hobby for a grown man, as it must surely be easier to talk to friends over the telephone instead of twiddling all those knobs and things, but there must be something to it as son follows father into the hobby.

I guess I first became interested in amateur radio about six years ago. Whilst visiting my father, George Humphrey VK2NO, one winter afternoon, he asked me to climb onto the roof of the house and snip a quarter of an inch off each end of a piece of wire, called of all things *a Dipole.* He explained that this would eventually reduce his *SWR* down to *One to One* on the meter in *The Shack.* It seemed like a simple job and, although a stiff August westerly wind was blowing, it would only take a minute or two to finish.

During the next half-hour, alone in the wind on the roof, interrupted only by Dad calling out *"Cut another quarter of an inch off each end of the antenna, mate, it's still a bit high"* — I got to wondering *"what the devil is a Dipole, an SWR, what is the complicated mathematical equation of One to One, and why does he insist on calling the third bedroom The Shack."* I recalled thinking some 30 years ago, as a teenager during one of Dad's *on-air* sessions, that amateur radio was a strange hobby for a grown man and why didn't he just speak to his friends over the telephone instead of fiddling around with all that equipment and twisting all those knobs. This line of thought was interrupted by Dad calling out, *"Come on down, mate, it's one-to-one."*

So, when I descended from the roof (after clipping little bits of copper wire from a thing that looked like an old fashioned clothes-line), I entered the third bedroom — sorry, the shack — where, I might add, it was warm and without a trace of the cold wind which had been my companion on the roof. I asked Dad to explain to me what enjoyment amateur radio gave him and why hadn't he become bored with a hobby that he had been active in since 1928.

Over the next hour, or so, I very slowly began to understand a little of the enjoyment he derived from his hobby and the meaning of words like Dipole, SWR, and One to One — the spark of interest was ignited. As the days went by other terms were explained like Wave Lengths, Ground Plane, Yagi, Capacitor, Diode, QSO, QSL, DX, CW, RTTY, AM, FM and Sideband.

I sat in the shack and listened with a new interest to Dad talk to friends he had had for over 50-years and to those new friends that had only just gained their licence. When Dad's mates called in for a visit I joined them and listened when they were second operators talking to distant friends in a Net — and my interest was becoming very keen.

During one of his QSOs, Dad said, *"I'll hand you over to my second operator."* I had a quick look around the shack, there was only Dad and I there — Gee, I'd love to have a talk, I thought! When I positioned myself in front of the microphone I discovered another new phrase — *Mic Fright.* My mouth became as dry as the Simpson Desert at drought time, with the words at first stumbling out at a very slow, unconfident rate and then speeding up to a rate that a race caller would have had trouble trying to decipher. I am sure the other amateur would not have understood a word I said. But when I handed it back to him, it gave Dad the time needed to settle me down and give me the confidence I needed and after a couple of overs the whole session became most enjoyable, even though it did start out as a *Nerve Wrecker.*

My very next contact was with a brand-new Novice who had only been on-air for a couple of days and I asked him how difficult it was to pass the examinations — *"Easy"* he said, *"Just a bit of study and your in like Flynn"* — (not all amateurs tell the truth ALL the time).

Based on this *Just a Bit of Study* philosophy, I sent away for the appropriate information and study guides. A week later back came the paper-work. I browsed through it and said to Dad — *"You must be kidding! Nobody could study all that information and pass an exam in less than 10-years!!"* But, in his own special way, he convinced me to *Have a go* at the easy part first and if I could learn the Regulations and five words-per-minute Morse send and receive, then we could worry about the theory-side of things a bit later. I took some convincing but eventually agreed with Dad, as the Regulations were not all that hard as they were really based on common sense, and as Dad had already put in several hours of explanation, I felt I should at least try.

We put all the information we could onto a cassette and whenever driving I continually played it on the car cassette over the next couple of weeks. It slowly sank into my memory, so, back to Dad I went to ask him to test me. To my surprise I had remembered most of the answers!

The spark of interest started to grow into a little flame. *"What's next?"* I asked. *"Easy"* Dad replied *"Have a crack at the Morse, all you have to remember is the symbols for 26 letters and 10 numbers — that's only 36 things all told and that is a lot less than the Regulations."* It crossed my mind that the Novice that had told me *"Just a bit of study and your in like Flynn"* would have summed up the learning of the Morse code in the same simplified way, but no, I must be wrong, it sounded easy enough. *"Okay Dad, I'll go home and learn them all tonight!"*

After a couple of hours study I went to bed and at breakfast next morning, lo and behold, some of the symbols had lodged themselves in my brain! Dit = E and Dah = T — only 34 to go. This was harder than a second language and I now thought the *in like Flynn* man was definitely working in collusion with Dad!

A couple of weeks later, when I did know all the symbols, Dad tuned in the WIA Slow Morse Session on 80 metres, saying it would help me. He then lent me his old Swan 350 and we set up a listening station at my home. For weeks on end I tuned into every Morse session that the WIA put to air.

It was about this time that both my wife and my mother thought that Dad and I had taken leave of our senses as we talked to each other in Morse and the Q-code.

I bought a cheap key and we built a buzzer into a cigar box and began sending and receiving sessions. We also made tapes to listen to on the car cassette. I told Dad of one occasion of sitting at the traffic lights listening to the symbols and saying out loud the appropriate letter when I noticed a passenger in the car next to mine looking at me rather strangely. I was a bit embarrassed, then thought it may be better, during this kind of practice, to keep the windows closed in case someone overhearing be might think it their duty to throw a net over me!

I passed the Regulations and send and receive Morse examinations and six months later managed to pass the Novice theory. The letter came in the morning mail advising me that at last I was a Novice! I rushed into town and picked up my call sign, VK2PVG (I was not going to wait around in case they found that they had made a mistake or, who knows, they may even run out of call signs!).

Armed with the receipt and my call sign it was home to collect my wife and off to tell Dad. I thought that I was happy but he was jubilant. That night I went on-air in my own rite and my first QSO was with Dad. We were like a couple of kids — full of excitement. Boy, that first QSO with your own call sign is something you can never forget.

I had also managed to pass the 10 WPM Morse exam on the day I had passed the Novice theory so all that remained was the AOCP theory examination, and on reading the various theory books, it looked like *The Impossible Dream.* However, Dad reminded me of what the Novice had told me over a year ago and the study began again. With only a meager two or three hours study every day for only a year I managed to gain the AOCP with a new call *VK2END.* I was very happy and relieved, but Dad was even more jubilant than when I had gained Novice status. Again, my first QSO with my new call was with Dad. The next day we sat around and Dad talked of the *Old Days* when he had been an operator, as part of the Waverley Radio Club, of the Mosman Experimental Wireless Station VK2NE (Nelson Eddy) and of how he and his old mate Hughie (now VK2ZAM), would broadcast records and birthday calls on the frequency of radio station 2SM, when the commercial station closed at midnight on Saturday nights, until the early hours of Sunday morning. The first broadcast was in September 1934, all carried out on mostly home-brew equipment, and was broadcast not only to local listeners, but to the DX Club of New Zealand who arranged to listen to the broadcast. This was the first time an experimental station in Australia had ever attempted a broadcast of this nature. He talked of working as an operator in the theatre and of his job with Western Electric wiring theatres, like the Lyceum, in the city and many suburban and country theatres, for sound when *Talkies* were introduced. Of how, after the war, he changed his call sign to VK2AKM (Australian Kilo Watt — Dad's own phonetics) and how he changed this to VK2NO (Nancy Ocean) to honour his old friend Don Nott, the original holder of the call sign, whom Dad had known since Don had arrived in Australia as a ship's operator. Don had passed away and Dad thought that it would be a good way *to keep the flag flying for Don.* Many new contacts would tell Dad about Don, and Dad would always tell them something extra that he would recall, and in this way Dad honoured the memory of his old mate.

In 1973, as reported in the press, during a QSO between Dad and a close friend, Horrie

Oaks VK2FA a breaker, who had hastily set-up his rig at the Riverina Advanced College of Education, asked if he could introduce a *special visitor.* The visitor happened to be HRH Prince Philip, The Duke of Edinburgh, who was visiting the college to present awards, and as his interest in radio is well-known, an amateur station was set-up for him. Dad recalled, *"We had quite a chat with the Duke, he was very keen on the history of amateur radio in Australia and passed on his good wishes through Horrie and myself to operators in this country."*

On another occasion, also reported in the press, during a Telecom industrial dispute, the Royal Hobart Hospital was unable to contact the Medical Application Centre, in Gladesville, Sydney, for spare parts for a Gamma camera used in the Nuclear Medical Department. A faulty relay switch made the unit unserviceable and as a result of the dispute telegrams and a telex did not arrive. A strong signal from VK2NO was heard by Mr Allen O'Halloran, the Head Technician of the Hospital, who was also an amateur, VK7OH. After permission to help from the various authorities was granted, a section of the 20 metre band was kept open by other amateurs until contact was made with the centre at Gladesville and the spare part was sent, post haste, via Mascot, and in a short time the Gamma camera was back in operation.

About this time I went, as Dad put it, *Key Crazy* and a very large percentage of my QSOs were on CW and as Dad was a *Phone Man* I asked him why he didn't use CW. *"Son, the first licence I held was restricted to working CW-only for six or 12 months and, at the end of that time, after the PMG's Department sighted my log, I was allowed to use phone. That afternoon I borrowed a row boat from a fisherman friend at Mosman Bay and rowed out into the middle of the harbour and dropped the Morse Key to the bottom where it belonged — but if ever I do decide to take up brass pounding again, and need a key in a hurry, I know exactly where I put it! !"*

During last year, Dad introduced me to two metres and we enjoyed many QSOs while I was mobile at work and I met many of his mates who were restricted to these particular frequencies. It is a whole different style of amateur radio, but just as enjoyable.

On 18th March 1986, my Dad, George Humphrey VK2NO, went *Silent Key,* I know I will surely miss him and I know his friends will too. I hope to keep Dad's call sign active and *Keep the Flag Flying* in honour of both Dad and Don.

MOBILE MOUNTING BRACKET FOR A HAND-HELD TRANSCEIVER IN A VEHICLE

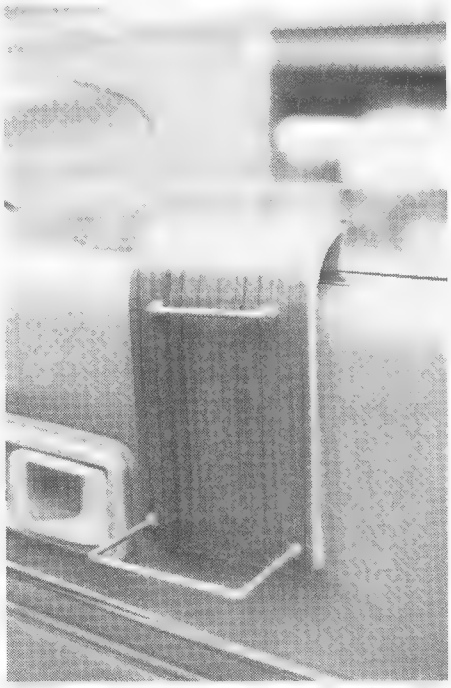
Steve Mahony VK5AIM
19 Kentish Road, Elizabeth Downs, SA. 5113

Having purchased a two-metre FM hand-held transceiver, and used it in the car I decided some form of Mounting Bracket was required. An inspection of an electronics brochure showed such a bracket was available. Further investigation at the local electronics store revealed a plastic variety which was deemed to cost more than it was worth.

A little thinking and a few practice cuts and bends with a piece of cardboard from a cereal packet, soon indicated the necessary shape.

The final bracket was made from a piece of brown covered Marviplate which matched the vehicle trim admirably.

The strip of metal is 220 mm long by 78 mm wide (or cut to suit a particular unit's dimensions). It is necessary for the curve of the top hook to match the internal contours of the car door — see photographs.



The bracket slips down between the window. The top bar accommodates the belt-clip of the hand-held whilst the bottom one steadies the unit.

Line the back of the metal with a piece of thin foam plastic to protect the door panel. The top bar is made of ⅛ inch (3 mm) diameter brazing rod, threaded with a ⅛ inch (3 mm) Whitworth thread, to secure the nuts for holding the rod in place. The width of this bar is adapted to suit the belt-clip of the hand-held.

The lower support bar is also ⅛ inch brazing rod prepared in a similar manner to the above one. This bar is made to fit the hand-held. It only stops the unit from moving around and the microphone can hang on it when not in use.

Around the city and suburbs the rubber-duckie antenna is quite satisfactory to access the local repeater, but if your location is a bit noisy, a quarter-wave Gutter Grip antenna or a small length of coaxial cable should improve signals.

A word of warning . . . Do not leave your vehicle in a public car park unlocked or with the window wound down or you will not have a hand-held . . . and the local repeater may have an extra user! Unclip the unit and take it with you. I am delighted with my hand-held and take it everywhere with me.

Whilst we may not be able to home-brew equipment equal to the latest piece of professional amateur technology, there are many little pieces of ancillary gear and accessories that the amateur can build and have the satisfaction of saying that "I made that myself!"

QSP

SINGLE CHIP MODEM

The first single chip modem for 1200 bps full-duplex transmission has been introduced by the Linear Division of Fairchild.

The μA212A modem performs all signal processing functions required for a Bell 212A/103 compatible modem. It incorporates an on-chip switched capacitor modulator, digital coherent demodulator, switched capacitor filters, 3.6864 MHz crystal oscillator and certain control and self-test functions.

To form a complete system, the unit requires only a general-purpose single-chip microcomputer to handle dialing, handshaking protocols and mode control functions and minimal external circuitry to handle the RS232C interface, ring detection, telephone- line interface and power supplies.

For voice/data terminals, where high reliability and space savings are critical, the μA212A provides the first single- chip upgrade path from one-chip 103-type 300 bps modems.

It is capable of accommodating both high and low-speed data rates, and incorporates a novel switched capacitor modulator and digital coherent demodulator for 1200 bps QPSK operation, and a separate digital FSK modulator and demodulator for rates of 0- 300 bps.

For example, in the high-speed asynchronous mode, transmit data from the DTE enters the chip's transmit buffer which synchronises the data to the internal 1200 bps clock, in the synchronous mode the buffer is disabled.

From Australian Electronics News, March 1984

"When Morsing, Remember the Human Factor"

Written by Jack Hum G5UM and reprinted from The Shortwave Magazine, February 1986

Smarting somewhat from the sensation produced at a previous meeting — quite unwittingly — by that quiet American, Cyrus B Clickmeister, about how telegraphy was used Stateside, the club members assembled in critical mood for "The Annual Inquest".

Not at all as cadaverous as it sounded from its title, "The Annual Inquest" was the meeting of the year when the Club looked back on its performance in The Great Annual Transmitting Contest, decided what went wrong (if anything), what went right (if anything) and How to do Better Next Time.

Mister Chairperson set the temper of the meeting when, recalling That Contest, he said that although the weather was good, the food was good, the logging was good, and the equipment good (for most operators, even if some felt there were too many confusing bells and whistles on the front panel), there was one area which was *not* good: "Our telegraphy performance was lamentable, and I'd like to ask what you all think can be done about it well ahead of next time."

To the surprise of all, The Man at the Club spoke up at once to say quite forthrightly: "What can be done about it? Why, refrain from entering at all next year! Telegraphy is an outmoded form of communication anyway."

Coming from one known to have served twenty years as a seagoing operator this observation was received with what is sometimes called a stunned silence. Then, from an atomic cloud of tobacco smoke at the rear of the room emerged the quiet bass voice of Highly Technical Gent:

"With respect, TMC, I think that remark of yours to be defeatist, to say the least . . . and I speak quite dispassionately as a Class-B ancient of two decades' sitting who hasn't the slightest interest in your dit-dahs."

The stunned silence was broken again, this time by Virginibus:

"I wonder what Cyrus B Clickmeister would have to say about that!" he piped: "Pity he's had to move on to Gotterdammerund or was it Garmisch-Partenkirchen?"

"Garnish *what*?" roared Ethelbald: "That's what they do down at the Chinese takeaway."

"H'm, we *are* getting international!" murmured Old Fangler ". . . what with Germany, China and our dear American friend."

Detecting that the discussion was wavering woefully away from the specified bandwidth Mister Chairperson attempted to pull it back on frequency:

"International . . . a buzzword if ever there was one. And 'Morse': another buzzword if I may say so."

Nobody could decide if this reference to Morse was an intentional pun or an unintentional one. At any rate, everybody was too polite to laugh. Then —

"Please speak, Old Fangler" invited Mister Chairperson: "*You've* been pounding brass and diddling bug-keys longer than most of us. Do *you* feel we fell down during The Great Transmitting Contest because we weren't good telegraphists?"

Never one to be cornered, Old Fangler gave it as his opinion that some of the Club members were good telegraphists for some of the time but not all of them for all of the time. He felt he ought politely to dispute TMC's suggestion that telegraphy was an outmoded mode. Warming to his theme as he so often did when roused he went on:

"Remember with CW you are putting all of your transmitted power into a single note in the distant listener's receiver. You don't do this with even the best generated SSB. Your voice spreads out that note from cycles wide to kilocycles, and from what I've heard a lot of it splatters far beyond the 3½ kilocycles it ought to occupy."

"He means hertzes not cycles" came an anonymous comment from somewhere in the middle of the room. Ignoring it Old Fangler went on:

"If you think about it you won't deny that telegraphy is the most efficient means of sending information that you could want — and I think Cyrus B demonstrated this to us at the last meeting."

Rarely did O-F expatiate at this length. "He's proper wound up" was Ethelbald's stentorian opinion. Then through a Battle of Jutland smoke screen at the rear of the room came the thunder of a heavy cannonade: it was Highly Technical Gent to say:

"You can't substantiate that claim, Old Fangler. With respect to your many years and to your dear old bald pate I would suggest that any form of data-processed transmission gives you a higher efficiency in terms of information impartation than your old up-down brass pounding ever could."

Impartation . . . I must remember that one" murmured Mister Chairperson to Mister Moneybags in the next seat: "You don't think he meant im*plan*tation" came the whispered reply.

Young Virginibus of the sharp ears, overhearing these sotto voce exchanges quickly chipped in:

"All this data processing stuff is a bit off-beat. Let's get back to real Morse. What I've noticed is that lots and lots of people are very, very keen to use it. And six thousand of them are those Class-B people who asked for that variation in their licenses to be made to let them get pounding!"

With a snort that could have been congestion of his tobacco pipe but probably wasn't, Highly Technical Gent gave it as his opinion that the noble six thousand had requested the Morse facility solely to speed the day when they could get away from those boring omni-directional QSOs on 'Two' and instead talk to the world on aitch-eff phone. "If you believe they want to mug up the Morse to talk to each other on 'Two' you'll believe anything, young Virginibus", he declared.

"Spread a little charity, HTG" requested Mister Chairperson: "It's just possible that the six thousand and lots of others like them do genuinely believe CW to be the best mode there is, and that's why they're mugging it up. I'm confident they'll continue to use it even when they've graduated to Class-A and aitch-eff."

"Hey, they don't graduate!" snapped HTG: "May I remind you what I've said here before, that a Class-B system is demonstrably more efficient than a Class-A one?"

A groundswell of assent and dissent rose from the assembled members like the sussuration of a charged cloud when the antenna is turned upon it. Mister Chairperson felt it was time to effect a *dis*charge.

"Thanks, all, for your opinions" he began in an S4 voice, hand raised.

No effect on the assembled company.

"Ordah, ordah!" he called at about S6 in his best emulation of that other chairperson in Another Place whom he had heard when Radio 4 went to SW1.

Still no effect. Accordingly, at S9-plus:

"Will you lot darn' well listen to me!" They did.

"Chair, please, gents" from Mister Moneybags as the dissent diminished by a dozen decibels, punctuated only by a sudden "Cor', now you can 'ear an aitch drop!" from Ethelbald.

Proceeded Mister Chairperson: "We've made no progress on our Annual Inquest, so where do we go from here?"

"I'll tell you" ventured The Man of the Club: "Don't let's have an inquest at all. Instead, let's have a local CW contest to see just how bad — or good — we are . . . and I know of at least six Class-B men in the room tonight who would be ready to have a go."

"That we will!" The six chorused almost in unison.

"That's very big of you, TMC" quoth Virginibus: "Only ten minutes ago you said telegraphy was an outmoded and inefficient way of talking over the air — and *now* listen to you!"

The Man at the Club hung his head in mock humility: "Remember, Virginibus, I did my professional brass pounding for money, and in my years at it I reached the conclusion that there must be better ways of transmitting intelligence. Suggestion: ask someone who did it for love, not for money, how *he* feels about it. Speak up, Old Fangler!" "Please do", added Mister Chairperson.

Old Fangler rose to his feet, adjusted the old timer's badge in his lapel, and drawing a deep breath said:

"When we started our inquest this evening, fellers, we agreed that on the day of The Great Annual Contest everything was A- okay — the gear, the food you grabbed when you came off operating-watch, the logging. Then why didn't we win? Mister Chairperson has told you. It was because our Morse technique was lamentable. Why? Because we didn't pay enough attention to the human factor. Morse-sending, and even more important Morse-receiving, are controlled by the human brain. Put all those automatic digital senders and receivers to work if you like, but they'll never do something only the human brain can do and hat's to winkle out those weak 'uns seven layers below the QRM when you almost need to apply your imagination to what they are saying to you. We'll learn how to do this if we have that local CW contest suggested by TMC. Then p'raps we'll stand a chance in next year's Great Annual. That's enough for me." And O-F sat down.

"Were Cyrus B Clickmeister here this night!" murmured Mister Moneybags as they all trooped out to the tea bar.

ar

GaAsFET LOW-NOISE AMPLIFYING MODULE

Mitsubishi Electric have developed a gallium arsenide field effect transistor (GaAsFET) low-noise amplifying module, which features high gain, for use in satellite broadcast receivers.

Satellite information systems require high performance microwave receivers featuring low noise and high gain, and the performance of such receivers depends on GaAsFET amplifiers.

In developing the amplifying module, Mitsubishi Electric has succeeded in integrating discrete devices into a hybrid IC by using a thick-film ceramic substrate. This has made it possible to manufacture low-noise, high gain receivers for business communications and direct satellite broadcasting systems.

Adapted from Australian Electronic News, March 1986

ZERO DEFECTS

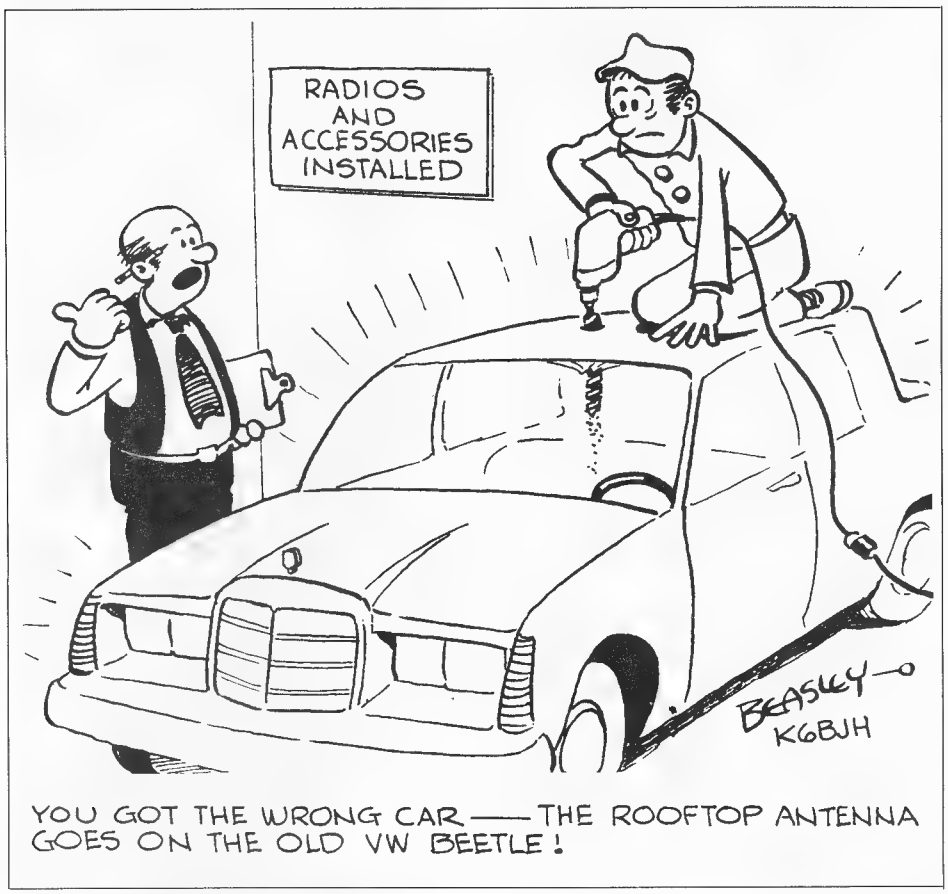
A zero defects warranty, which was implemented in August 1985, has now been extended to cover all integrated circuits produced world-wide by the Philips group of companies.

Under the terms of the warranty a customer who finds a single defect in a batch will be able to return the entire batch for re- screening or replacement.

The warranty applies to all standard-function ICs manufactured after 1st March 1986. Customers will have 30 days in which to report a defective batch.

This warranty means that Philips standard is not 500, 200 or 50 parts per million, but zero.

Adapted from Australian Electronic News, March 1986.



Cartoon courtesy WORLDRADIO, February 1986

INVENTORY OF VIDEO TRANSMITTER VENDOR SEIZED

On 16th January, agents of the FCC, the US Marshal and the FBI served a search and seizure warrant on a company in Las Vegas, Nevada. Several thousand dollars' worth of suspected illegal electronic devices and accompanying shipping receipts were removed from the facility.

The warrants were based on evidence developed by FCC that indicated that the company had continued to illegally market electronic devices after having received several warnings from the FCC.

The specific devices, marketed under the brand name of *TV Genie,* were designed to transmit video programming from equipment such as video tape recorders and video cameras to television receivers. The transmitters were being marketed by mail order through advertisements placed in several electronics-orientated consumer publications. In addition to the marketing of such equipment being illegal, use of these low power television transmitters constitutes unlicensed operation and subjects the user to severe penalties. Despite claims to the contrary by some manufacturers, none of the low power television transmitters may be legally sold or used in the US, regardless of the transmitted power.

From The ARRL Letter, 13th February 1986

ARMCHAIR PUNTERS GET VIABET

High technology now allows anyone wishing to bet on the TAB in Western Australia to do so from the comfort of their living rooms. The TAB has linked up with Telecom's Viatel computerised information network to provide what is called a "Viabet" service for home use.

Viatel is a computer-based information retrieval system, which can be switched through to a normal domestic television set.

It was already available for use in 12 000 Australian offices and homes, and the TAB in WA hope it will have 600 regular Viabet users within the next few months.

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YES! — Jamboree on the Air Can Be Fun

Noel Lynch VK4BNL
15 Noeline Street, Dorrington, Qld. 4060

After a very long association with Jamboree on the Air (JOTA) — in fact, since its inception in 1958, and at both Scouting and amateur radio levels, I sincerely believe that JOTA can be fun for both amateur operators and the Scout and Guide Leaders. However, like many other facets of our hobby, eg DX, Contests, or in fact any other contact, it has to be worked at to make it a success. Things just don't happen! It is particularly so with JOTA, because in this instance we are involved with others — the Scouts, Guides and their Leaders — who are as unfamiliar with amateur radio activities as we are with their activities. So it is very important to both parties that we really get-together to ensure its success, and provide enjoyment for both sides in this very wonderful national and international experience.

I have personally had a long association with JOTA in both areas, Scouting and amateur radio. In fact, it was thanks to JOTA that I gained my first amateur radio licence in 1972. I participated in the first JOTA in 1958 and in that year and the following two years, was a Scout Group Organiser for JOTA.

It was an honour, in 1961, to be asked by the State Scout Association to accept the appointment as Branch (State) Organiser for JOTA in Queensland, and again in 1964 being appointed as National Organiser for JOTA at National Scout Headquarters level. This latter appointment was held continuously until my retirement in 1984. (My predecessor, Commissioner Peter Hughes VK6HU, has also been involved with JOTA since its inception).

Jamboree on the Air gives Scouts and Guides an opportunity to make friends at an Australian and International level, a chance that would normally be possible unless they attended a national or overseas activity. Such activities are normally only held once every three years, in the case of a National Jamboree, or perhaps at an even greater interval in the case of a World Jamboree. In the present financial climate it would be an opportunity that fewer than two percent of Scouts and Guides would get the chance to experience, particularly at an international level.

By amateurs volunteering their services for JOTA, they are giving Scouts and Guides a rare and unique opportunity and many may be interested to know that many friendships made during JOTA endure over the succeeding years. A Philippine Scout who made contact with the writer during JOTA 1970, still maintains regular correspondence to this day.

There are other *spin-offs* as a result of JOTA. Like many other Scouts, Guides and Leaders, I became an operator through contact with JOTA. When I became involved in JOTA with my group in 1958, the interest engendered in amateur radio through that association prompted seven of my group to seek a further hobby in amateur radio, and due to the good grace of a friendly local radio amateur operator, we were able to form a special study group. The result of this study group was that four of the boys eventually gained their Limited Amateur Radio Operators Certificate. They even shamed me into following in their footsteps, a consequence surely none of us has ever regretted.

I believe it most important that all participants get the most from JOTA. If neither side do, there has to be a reason. The reason can only e that one or the other side, or both, did not work at it, and I stress that both sides must work at it.

At the very beginning of JOTA, both the founder, Les Mitchell G3BHK, and the Scout World JOTA Organiser, Len Jarrett VE3MYF, were well aware of this, so they released the following Guide-lines to ensure that both parties really achieved something worthwhile from their association with JOTA. There is no apology for repeating them now in the hope that they will be of some use to you also. Firstly though, it should be mentioned that this years JOTA commences at midnight, local time, in each country throughout the world, on Friday 17th October, and terminates at midnight (again local time), on Sunday 19th October.

The Australian National Opening Ceremony takes place through VK1BP, located in the grounds of Government House, Canberra, commencing at 0400 UTC on Saturday, 18th.

Amateur operators who may wish to volunteer their services are not expected to make available their services or the use of their equipment for the full 48 hours of JOTA. All or any portion of this period they can spare will be very much appreciated.

Now to the Guide-lines:

A definite need exists for the amateur operator and the Scout and/or Guide Leaders to get-together prior to JOTA. The initial meeting could determine whether the operator wishes to participate at his own shack, or if agreeable to a suggestion from the Scout/Guide Leader, at the Scout Den or perhaps camp. If the participation is to be away from the operator's shack, he should make quite clear that assistance is required in getting the equipment to and from the site, and in the erection and taking down of antennas. Also, that as the operator will be fully occupied with operating, it should not be unreasonable to expect that assistance will be forthcoming with the provision of refreshments and meals. Most groups are already doing this anyhow.

It was thanks to JOTA that the writer gained his first amateur licence in 1972.

Stress that during JOTA, a Leader must be in attendance and this is at all times. This should be made very clear as it is not the intention of either the Scout or Guide movements that operators during JOTA should be acting as sitters. *If at the operator's own shack the group/s should be kept as small as you stipulate, with rostering for other groups to be arranged by the Leader with rostered groups turning up only at the pre-arranged times. The Leader should ensure this, especially by his own presence at all times.*

While initially the approach might be expected by the amateur from the Scout or Guide Leader, any Scout or Guide group not knowing how to make the initial contact would certainly welcome one from an amateur operator. Ensure, though, that any arrangement made with a group is confirmed at least one month prior to JOTA.

It could be advantageous to both sides to inform the Leader that in the interests of JOTA, you would welcome the opportunity to make several visits to the group prior to JOTA so that you could make the Scouts and Guides aware of some of the mysteries of the hobby, in particular, propagation, how antennas work, basic description of amateur radio and perhaps, the phonetic alphabet, and more importantly, intelligent use of the microphone.

A couple of practice sessions with the Scouts/Guides and their Leaders would represent a definite bonus, using radio telephone procedures. The use of a tape recorder would have enormous value and would almost certainly avoid later on the tongue tied *situation, so exasperatingly obvious during JOTA contacts.*

After JOTA, the Scout/Guide group (not the amateur) is expected to submit to their State Scout/Guide JOTA organiser, a log report, including amongst other items, details of contacts, frequencies, and whether contacts were in their own State, inter- State, or overseas. They may, however, seek your assistance there. Their report, when submitted, should also ensure that you, the amateur, will receive a Thank You Participation Certificate. Do not hesitate to let your local group know if you do not receive yours.

The Scout/Guide Leader present should be able to relieve you of all responsibility except actual operating once you have explained what you want done and you should stress this in your pre-Jamboree discussions. The Leader, during JOTA, could introduce the Scout/Guide, having ensured beforehand that some homework has been done by the Scout or Guide in developing a suitable topic for on-air conversation — the group, its size, main interests, information about interesting camps, historical and contemporary details of the local district — farming, industrial, etc — and the Leader should ensure that the Scout/Guide remains until the next over in case some questions need answering. The Leader is also responsible for ensuring silence in the shack during operations.

Finally, good operators ensure that any spare equipment in the shack not actually in use has microphones disconnected while the main transmitter is in service, And for a final final, please note that during the National Opening Ceremony from Canberra on Saturday 18th October, commencing at 0400 UTC (and for a half-hour warm-up period prior to that time) three frequencies are being used simultaneously for the Governor General's and other dignitaries speeches, and for the call backs afterwards. These frequencies are 7.090, 14.190, and 21.190 MHz and your assistance in avoiding these frequencies until 0500 UTC on that date will be deeply appreciated by all concerned with the Ceremony.

Photograph from The Story of 25 Eventful Years in Pictures

Lord Baden Powell, founder of the Scouting Movement.

In your particular State, the Scout Branch Organiser and Guide Liaisons have a Wireless Institute of Australia Jamboree on the Air Liaison who may be of further assistance to you in matters relating to JOTA. A letter to your local Division, or to the State Branch Organiser JOTA, c/- of the address for Scout Headquarters in your State as per the Telephone Book, should bring an immediate response to any queries you may have. Alternatively, an inquiry to the National Co-ordinator JOTA, Commissioner Peter Hughes VK6HU, 58 Preston Street, Como, WA. 6152 will certainly bring a prompt response to your inquiry.

So, do work at your participation in this year's JOTA and good luck and a very enjoyable participation in the 29th Jamboree on the Air. Hopefully the above Guidelines will help you get started this year, if you have not already participated, or if your are a previous participant, ensure an even more enjoyable participation in 1986.

HAVE YOU CAUGHT THE JUBILEE INDUSTRY TRADE TRAIN?

The Jubilee Industry Trade Train has been out there in VK5-land, just waiting for your next call!

Graham Horlin-Smith VK5AQZ
CO-ORDINATOR JUBILEE 150 COMMITTEE
(WIA SA DIVISION)
2 Athol Avenue, Tranmere, SA. 5073

Since 16th March 1986, this train has been busy touring country centres around South Australia. On the train are displays and demonstrations from 30 South Australian companies. Amateur radio communications are also aboard. (The previous look-a-like travelling rail show-case of commerce took place 35 years ago.

South Australia's birthday appears to be an opportune time to re-introduce the Trade Train in keeping with the celebrations which are happening in South Australia. By the time the train returns to Adelaide from 5th-9th June, the quarter of a kilometre long train will have travelled in excess of 4000 km of railway networks during the three-month long program. The Industry Trade Train is one of many major Jubilee 150 projects for 1986, organised by the Industry Executive Committee of the Jubilee 150 Board.

South Australian companies and organisations representing most of the State's major employers and prominent small businesses have taken the opportunity of the 150th celebrations to show as many South Australians as possible the showcase of industrial expertise, innovations and achievements.

The train is based on a series of exciting displays and demonstrations housed in special exhibition cars and visitors are able to look and learn, touch and try. However, the action has not all be *on the tracks*. Platforms and the surrounding areas will form part of the Trade Train display, adding the *fun of the fair-ground*.

Community groups were invited to arrange displays and promotions covering local and district industry, commerce and history. There is also a craft exhibition, sideshows, and a wide range of souvenirs and refreshments — something for all the family).

Local Jubilee 150 Committees, Service Clubs and other community groups also organised activities to coincide with the train's visit. These include historical re-enactments, period costume balls, poster competitions, foot and bicycle races, trade fairs, carnivals and street parades.

The WIA (SA Division) and South Australian amateurs were quick to realise the promotional possibilities both for the hobby itself as well as provide support input to the Jubilee 150 project by way of amateur communications. The opportunity to give publicity outside South Australia and overseas to the train activity and therefore involvement of amateur radio on the train was automatically given the green-light by the train's executive officer, Mr Andre Wilcox and his Committee.

Once again South Australian amateurs have taken to the rails, but with a slight difference. This time volunteer groups from the city and country areas have combined to work from the stationary station on board the train in each of 20 different country locations including Adelaide at the beginning and the end of the journey. These amateurs, by their involvement, are sharing this Jubilee activity with amateurs in Australia and overseas.

The amateur station is situated in a brake-van in Carriage 8, Space F in the middle of the train. This is ideally situated as a communications centre with a static display of amateur radio materials and information for the visitors to the amateur base station. The display has been professionally accomplished again by Peter Koen, whose contribution to the promotion of the hobby has been greatly appreciated.

At each of the designated whistle stops, a fresh team of amateurs take-over — similar to an amateur radio marathon relay. The onboard shack is supplied with quality power from generator cars, with mains power used as a backup at each stop-over, if necessary. Two metre operation is optional dependent upon proximity and the use of repeaters whilst HF operation is equipment provided and worked by amateurs at each location.

Photograph by Peter Koen

Static Amateur Radio Station Display revamped aboard the train by Peter Koen.

Photograph by Graham Horlin-Smith VK5AQZ

Visitors to the station at Mount Gambier were Rendlesham School Teacher, John McKinnon, his wife Josie, nursing young Jack, and John's sister Heather, on the right and the Keeper of the Log Books.

The Jubilee call sign, VK5JSA/Trade Train offers further points for the Jubilee 150 Award. For those interested in the Jubilee Award, the Trade Train is a new activity and is worth 15 points for the initial contact for each of the bands the station is worked. An additional five points can be claimed for the Award for each country location that the train is worked. Club and operator call signs activated from the train offer additional points.

A special, one-off, one contact QSL card for the Trade Train Award can be sent to the WIA (SA), Box 1234, Adelaide, SA 5001, (marked *Trade Train Award*) for $2 packaging and mailing. This Award had become quite popular to follow on from the Cape Willoughby, Kangaroo Island Jubilee 150 Award.

The train will be in Broken Hill on 29th-31st May and in Adelaide from 5th-9th June. Frequencies operated are 28.470, 21.186, 14.186. 7.086 and 3.586 MHz. The prime net frequency is 3.586 MHz and meets every Tuesday, Friday and Sunday at 1000 UTC.

Several further activities are planned for the Jubilee 150 Year including Rail Mobile from Adelaide to Alice Springs and return in June, the City of Marion Centenary Celebration and a special activity for the Grand Prix in October.

Photograph by Graham Horlin-Smith VK5AQZ

A Carnival Atmosphere surrounded the opening of the Train's Journey.

Novice Notes

Drew Diamond VK3XU
Lot 2, Gatters Road, Wonga Park, Vic. 3115

THE OPEN WIRE FEED, HF MULTI-BAND DIPOLE

Most solid-state transceivers require a load of nominally 50 ohms for correct operation. If the antenna presents an impedance which departs too greatly from this value, circuitry which monitors the SWR (in most transceivers) will cause the drive power to decrease in an attempt to protect the output amplifier. For a coaxial fed antenna, line losses will also increase in proportion to the degree of mismatch. The connection of an antenna coupler or tuning unit between the radio and antenna will probably permit the output amplifier to *see* a 50 ohm load, but beyond the coupler, towards the antenna, the degree of mismatch and resultant high SWR will be unaltered, so line loss will remain. The amount of loss will depend on the quality of the coaxial cable.

One of the most popular all-band antennas for many years has been the horizontal or inverted-vee wire, fed with low-loss open wire feeders. The reason for the popularity is easy to explain. Just about any length wire — as small as one-quarter wave-length long on the lowest band, will yield reasonable results, and really good performance can be expected on all bands where the radiating portion is longer than one-half wave-length. Any convenient feedline length (although some lengths will provide easier matching) may be used. Even is a very high SWR may exist, losses will be acceptably low, as the main dielectric is air. Because of the physically flat nature of the feedline, it is generally simpler to get it indoors than for coax. For example, the line may be passed through the gap between a window and frame and still allow the window to be closed, so avoiding the need to drill holes and so on. This applies especially to the low-loss television-type line (Figure 2). There is one pre-requisite with this antenna however, in that a tuner is an essential requirement.

The tuner performs three main functions:

** Provides a match between the nominal 50 ohm impedance requirement of the radio, and the complex, usually unknown impedance at the station end of the feedline.*

** Interfaces the unbalanced coaxial input/output of the radio to the balanced feedline and antenna.*

** Significantly reduces the level of any harmonics, and provides some pre-selection for the receiver.*

Because of the voltages and impedances involved, it is generally not possible to perform the matching function with broadband transformers and baluns. More about the tuner later.

ANTENNA

The top radiating portion of the antenna may be just about any convenient length that may be fitted into the physical boundaries of the property. It may be *flat-top* or *inverted-vee* or even vee in plan and elevation, and of course the wire should be located as high and in the clear as is reasonably possible. The author has used various forms of this antenna, the smallest being only 15 metres of radiating portion and six metres in height, to the present configuration which is 41 metres and 13 metres respectively. Two systems which are shown in Figure 1, and the table shows some more dimensions that should prove satisfactory. See also References 1 and 2. The trade-off between radiating portion **A** and feedline **F** is not critical. However, aim for as much wire in **A** as is readily possibly consistent with A + F.

Ordinary electrician's earth wire is ideal for the radiating portion, and the feedline if home-made open wire feeders are planned. Figure 2 shows the most commonly available feedline options. The insulators for the ends and feed connection point should be porcelain or glass *dog-bone* type with long leakage path. Avoid the ordinary *egg* type. If an inverted-vee configuration is used, three such insulators should be employed. See Figure 3. Note that the strain must be relieved from the feedline connection by passing these wires through the holes of the insulators, as shown.

As an alternative to the insulators mentioned above, teflon rod, about 1.5 cm diameter can be obtained from electrical insulation wholesalers. Sufficient stock to make three or five insulators of about 7 cm each will be required.

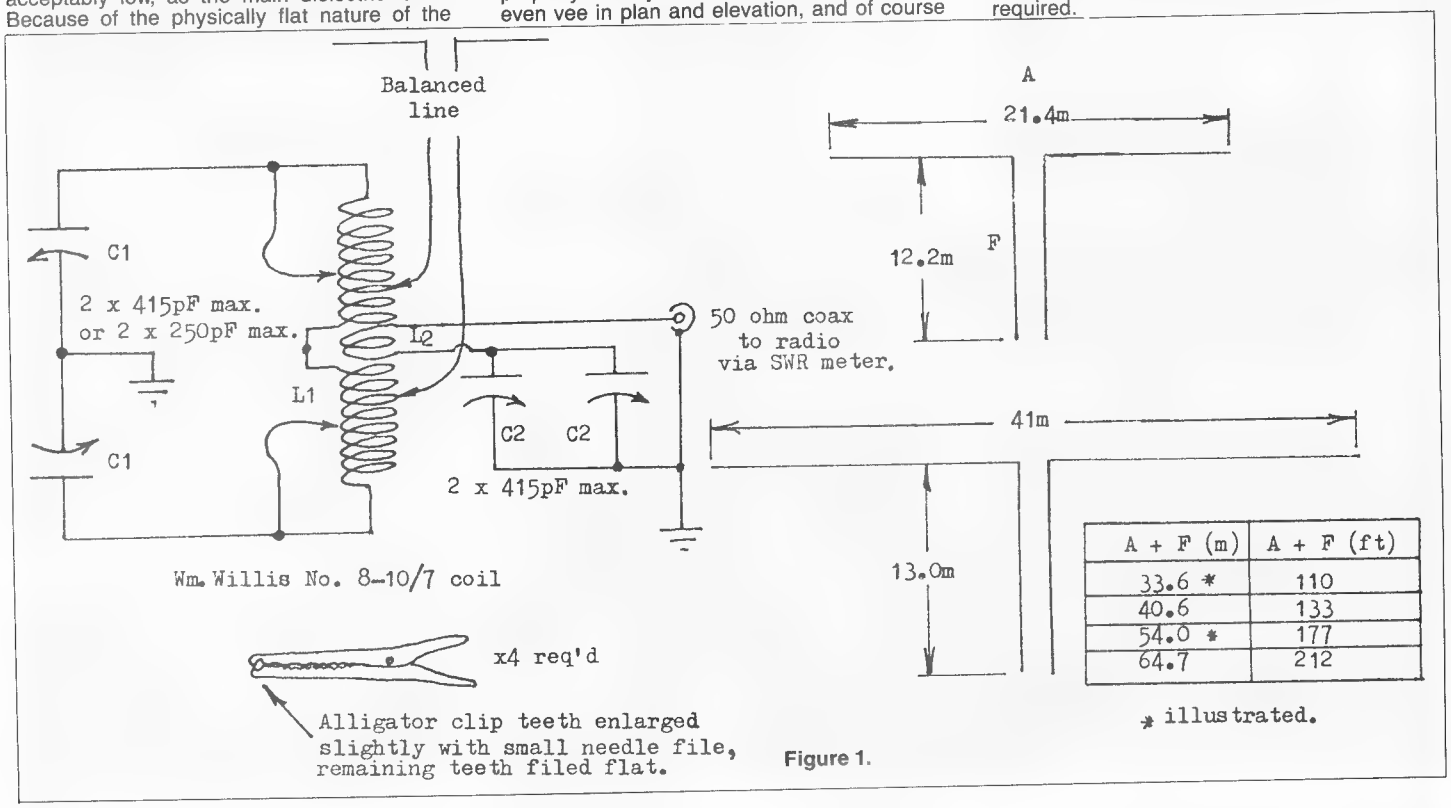


Figure 1.

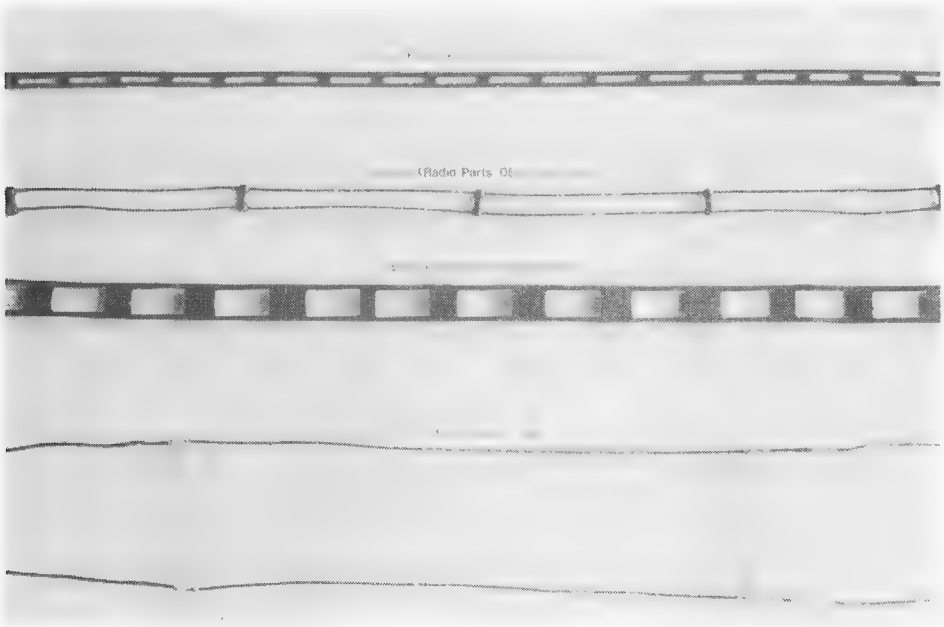


Figure 2.

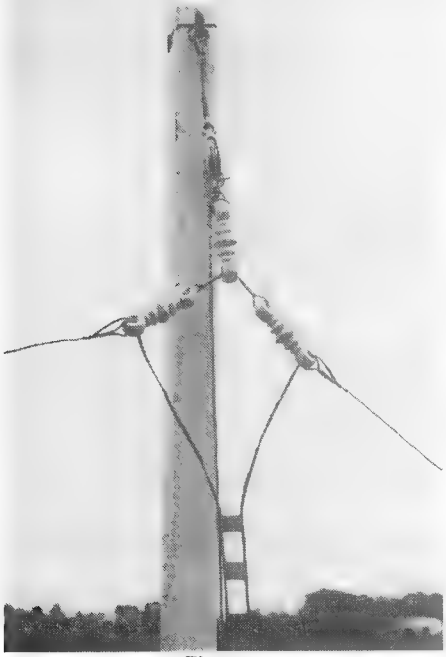


Figure 3.

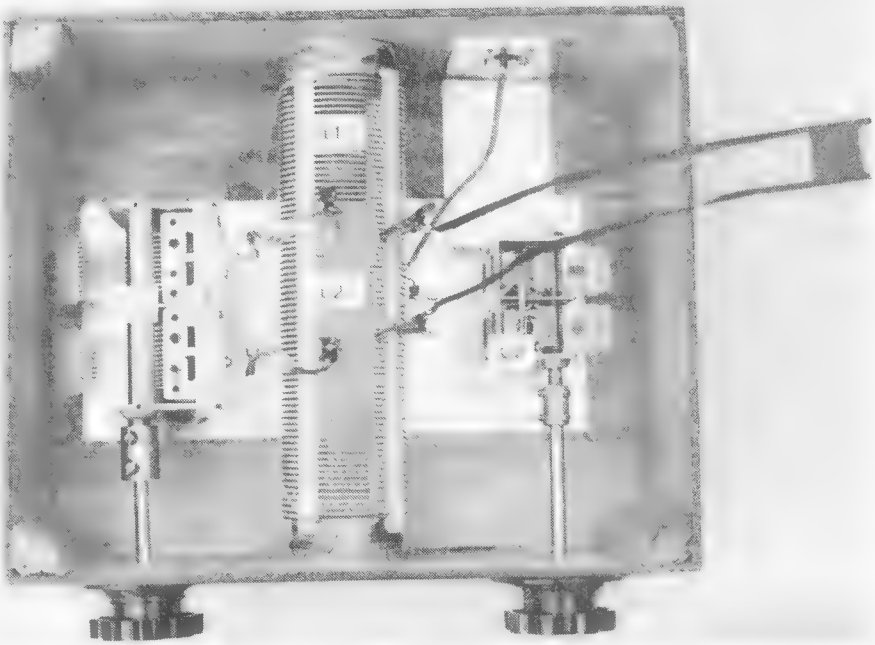


Figure 4.

Poly robe — the kind used by yachtsmen, may be used for the halyards, but it is very expensive, and deteriorates in just a few years of weathering. A cheaper and more lasting alternative is the green plastic covered steel clothes line wire sold in lengths at hardware shops.

TUNER

The circuit of the suggested tuner is shown in Figure 1. Variable capacitors of any kind have become very hard to obtain now, and to my knowledge, all production has stopped in this country. People who have been in radio for some years always seem to have a few going spare. If you know such a person, I can only suggest that they be approached for a donation. The coil is a factory-made one, available from William Willis & Co Pty Ltd, of Canterbury, Victoria.

To reduce the possibility of electric shock, the tuner components should be housed in some sort of enclosure. For simplicity and ease of construction, a wooden box is suggested. See Figures 4 and 5. This method allows us to mount the coil upon discs of wood glued to the front and rear panels without incurring eddy current losses as would be the case with a metal enclosure. Note that a strip of metal runs beneath the two variable capacitors to form a continuous ground connection between these and the coaxial connector fitted to the back panel of the box. The braid from RG-58 coaxial cable may be used for inter-connections.

The link coil, L2, is formed by isolating three turns in the exact centre of the coil L1. The free ends of L2 should be brought out to the side of the coil, and the centre ends of L1 rejoined as shown in the circuit. Do not earth L1.

If only low power operation is contemplated, C1 may be an ordinary dual-gang broadcast capacitor. These are not too difficult to find. For higher power work, C1 must have wide spaced vanes. A dual-gang 200 or 250 pF unit would be fine for this. C2 may be a dual-gang 415 pF BC type, even for power levels to the legal limit. The shafts of these two capacitors are nominally at RF earth potential, so no special insulating precautions are necessary.

TUNER ADJUSTMENT

By experimenting with the position of the taps for C1, the antenna connections, and adjustment of C1, band noise will be maximised to a point where no further adjustment causes a worthwhile increase in noise or signal levels. It will be found that near maximum C will be required at C2, so this may be set at full mesh for starters. Now, on a clear channel, apply a bit of carrier from the radio and observe the SWR reading. It should be possible to bring the reflected reading down to a small value with adjustment of C1 and C2. If a reading of near zero cannot be obtained, switch off carrier and try moving either the capacitor or antenna taps closer to, or further from the centre of the coil. **Do not touch the coil or feedline whilst carrier is applied!** When the ideal or best positions are found, record them. Remember that the antenna and coupler are symmetrical, so the capacitor and antenna taps must be positioned an equal number of turns from the centre, with the antenna taps always closer to the centre than the capacitor taps. If you are unlucky enough to have a feedline length that will just not allow you to obtain a satisfactorily low SWR on one or two bands, experimentally add about one metre of feedline and try again, checking to

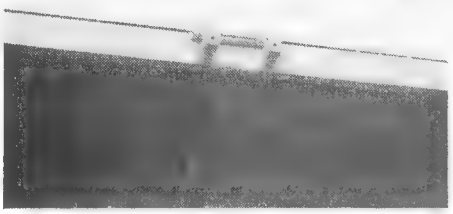


Figure 6.

make sure that the other bands have not been adversely affected.

LIGHTNING

It is doubtful whether anything will protect equipment from a direct lightning strike. However, a strike in the vicinity of an antenna can induce tremendous voltages, and something positive can be done about this. Fortunately, with this tuner, a spark gap is already provided by the vanes of capacitor C1. It is good practice to disconnect the feedline from the tuner when not in use. In addition, a spark gap, external to the station should be provided. Figure 6 shows the authors feedline on its way to the shack and making use of the grounded metal roof of the garage as the grounded body.

References:

1 Wire Antennas — William Orr; Radio Publications.

2 Radio Communication Handbook; RSGB.

From QST
— December 1985

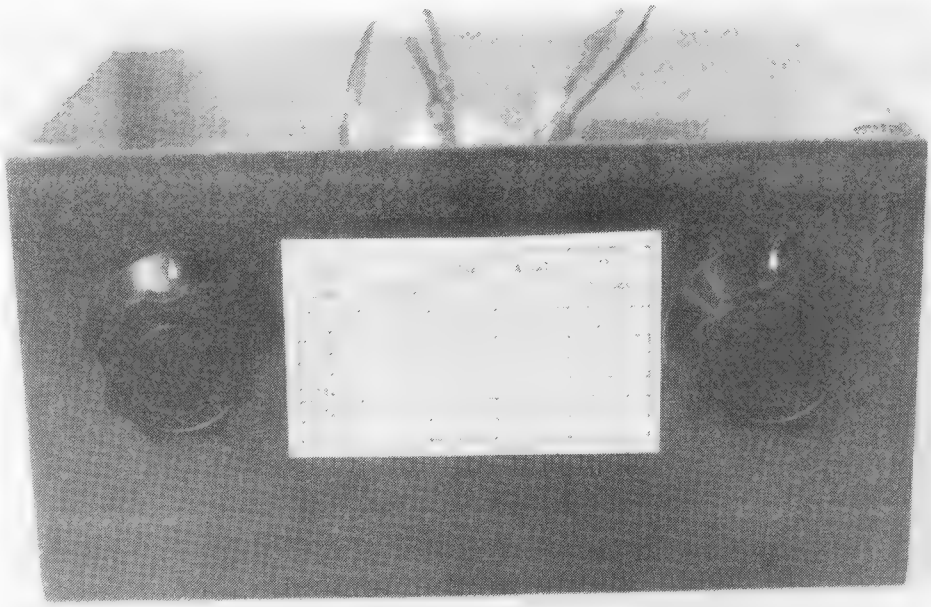


Figure 5.

AMATEUR RADIO AT EXPO 86!

A state-of-the-art amateur radio station will be featured at Expo 86, the World's Fair on Transportation and Communication being held in Vancouver, BC, from 2nd May to 13 October this year. The station will be located in the main exhibition hall of the Canada Pavilion, dramatically *anchored* in one of the world's most spectacular harbour settings.

The station will operate on all bands from 160 metres to 1.2 GHz, and all modes including SSB, CW, RTTY, AMTOR, Packet, FM, ATV and SSTV using the call sign VE7EXPO. It will operate from 10am to 10 pm (local time) each day, and provide an exciting and interesting introduction to amateur radio for many of the more than 13 million visitors expected at Expo 86.

VE7EXPO, which will feature Icom's newest equipment on all bands, will have five operating positions — one each for packet, satellite and VHF/UHF, and two for HF. HF antennas include a multi-band Yagi, verticals and home-brew bazookas. The satellite system will use two 14-turn helixes on 434 and a pair of 22 element Yagis on 144 MHz.

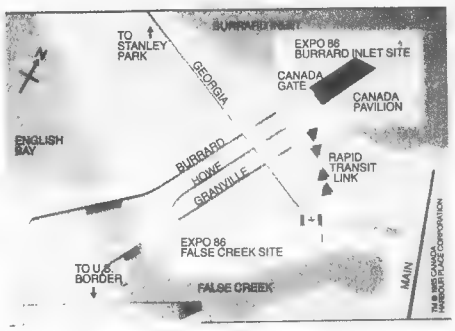
The packet station uses the latest VADCG TNC+ packet radio interface, and a computer system to allow the public to ask questions about amateur radio — via a packet radio link to the VADCG's (the pioneers of packet radio in North America) bulletin board. The TNC+ can use the Vancouver V2 and V3 protocols as well as AX.25, so packeteers are encouraged to link to the station as well.

The station will be active during as many contests as possible, and count as a special 20 point bonus station during the 1st July Canada Day Contest. All contacts will be QSLed through the VE7 Bureau, with outgoing cards via the CARF outwards bureau.

VE7EXPO will be manned entirely by volunteer amateurs and provide, not only a massive public relations opportunity for amateur radio, but an information centre for many non-local amateurs. Local repeaters on 146.940, 224.300 and 443.525 MHz will be monitored in case visiting amateurs need directions, etc.

Visiting amateurs are encouraged to drop by and operate (with a valid licence or call book address). Amateurs who wish to take part as a group, or who wish to arrange scheds for special events should contact the VE7EXPO Amateur Radio Society, 202 — 13640 67 Avenue, Surrey BC Canada, V3W 6X5.

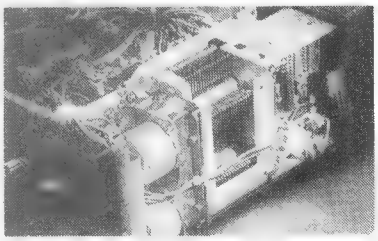
Contributed by Robert Smits VE7EMD



Canada Pavilion at Expo 86 — Spectacular Canada Place is the harbour-front site of the Canada Pavilion at Expo 86 in Vancouver. The flagship of Expo will showcase Canada's finest technological and cultural achievements. The ship-like structure also houses a cruise-ship terminal, the Pan Pacific Vancouver Hotel and World Trade Centre office complex, and the CN Theatre, the world's first three-dimensional theatre. After Expo 86, the pavilion will become a world-class Trade and Convention Centre, the largest facility of its kind in Western Canada.

KENWOOD

TS-440S



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The TS-440S is an HF transceiver designed to condense every conceivable feature for SSB, CW, AM, FM and AFSK mode of operation on all amateur bands in compact package. It is the ultimate compact size with the automatic antenna tuner built-in and featuring a highly efficient final amplifier cooling system. It incorporates a 100 kHz to 30 MHz general coverage receiver having superior dynamic range.

ALL-MODE OPERATION

Mode selection USB, LSB, CW, AM, FM or AFSK is quickly accomplished through use of front panel mode keys. International Morse code confirms to the selected mode.

SUPER RECEIVER DYNAMIC RANGE

The receiver front end has been specifically designed to provide superior dynamic range.

The IM dynamic range is 102 dB, with an overall intercept point of 15 dBm, noise floor level of -138dB. (An optional 500 Hz CW filter YK-88C installed).

100 memories store frequency, band and mode 100 memory channels allow storage of frequency, band and mode information, providing increased convenience with simplicity of operation.

Dual programmable band scan allow selection of the desired frequency groups to be scanned. Both groups may also be scanned one after the other.

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(INCORPORATED IN N.S.W.)
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Further, beware of dealers not listed in this advertisement who are selling Trio-Kenwood communications equipment. All Kenwood products offered by them are not supplied by Trio-Kenwood (Aust.) Pty. Ltd. and have no guarantee applicable.

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S.A. & NT: INTERNATIONAL COMMUNICATIONS SYSTEMS PTY. LTD.—8 NILE ST., PORT ADELAIDE (08) 47 3688
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International News

18th WORLD TELECOMMUNICATION DAY

Partners in progress: governments, operating entities, manufacturers and users was the topic chosen by the Administrative Council of the International Telecommunication Union (ITU) for the 18th World Telecommunication Day, which is celebrated annually on the 17th May. This day commemorates the founding of the Union in 1865, under the name *International Telegraph Union,* by the delegates of 20 States signatories of the International Telegraph Convention, the first intergovernmental treaty for the regulation of international telegraphy.

Towards Universal Telecommunications

Paris, 17 May 1865: the Plenipotentiaries of 20 states, moved by the wish to establish a permanent understanding among themselves, signed the International Telegraph Convention creating the International Telegraph Union, later to become the International Telecommunication Union.

At this time, the industrialisation of certain regions of the world called for increasingly reliable and swift communications. Although the telegraph was already widely used within many states, the creation of a genuinely international telegraph network came up against a man-made barrier, the national frontiers, at which the telegraph wires usually ended.

The International Telegraph Convention of 1865 therefore provided measures aimed at overcoming this obstacle and promoting the development of a world-wide network.

As the first inter-governmental treaty applicable to a public service, the Convention — to which every sovereign state was at liberty to accede — contained the concept of universality which was to become an inspiration for the action of the countries Members of the Union.

The first stage consisted in the standardisation of operating and accounting methods from amongst the different technical possibilities: every major innovation in communications was swiftly matched by specific Union action to make use of the new discovery in the world network.

The history of the ITU in this respect reflects that of the technological development of telecommunications.

For example, the invention of the telephone in the 1870s led to the adoption at Berlin in 1885 of the first regulations governing the international telephone service.

The invention of radiotelegraphy at the end of the last century led to the signing of the International Radiotelegraph Convention at Berlin in 1906.

In the 1920s, the introduction of new services such as broadcasting and the growing complexity of the techniques employed prompted the countries Members of the Union to allocate the frequency bands and to set up Consultative Committees to prepare international standards.

At Madrid in 1932, the Plenipotentiaries of the Union emphasised the universality of telecommunications by deciding to merge the International Telecommunication Convention and to rename the organisation the *International Telecommunication Union.*

Closer to out own times, the intensive use of radio communications necessitated the creation of an international board to manage the frequency spectrum. The dawn of the space age in 1957 impelled the Union to adopt regulations for the space services.

A world-wide integrated network was thus gradually constituted through the will of the ITU Member countries, accompanied by the affirmation of the concept of universal telecommunications at the service of every member of the human community.

This evolution was greatly assisted by the decision of the Plenipotentiaries, meeting at Atlantic City in 1947, to make the Union the United Nations specialised agency for telecommunications.

Having become part of a large pattern, the ITU actively co-operated with the other specialised agencies in implementing the United Nations Development Program.

Design and installation of national and regional networks, training and the preparation of plans — particularly for radio communication services — intended to safeguard the legitimate interests of all countries regardless of their technical capacity at any given time: ITU action now recognised the role of telecommunications as a key to social and economic development.

This role was reflected in the work of the 10th ITU Plenipotentiary Conference, held in Nairobi in 1982, which as the very Preamble to the Convention signed by the Member countries affirms, took its decisions *having regard to the growing importance of telecommunication for the preservation of peace and the social and economic development of all countries."*

Thus, the Nairobi Conference marked a turning point in the history of the Union which, while continuing regulation, standardisation, coordination and planning activity, also committed itself to the task of redressing the enormous imbalances in telecommunications development.

For this purpose, the Plenipotentiaries set up an Independent Commission of 17 wise men representing all continents and with the assignment of producing specific proposals designed to put an end to this unacceptable situation . . .

. . . Proposals whose importance was stressed by the ITU Secretary-General, to whom they were submitted in 1985.

These proposals, calculated to motivate the international community and national authorities alike, might, if implemented without delay, turn the tide. Within 20 years they might place within reach of every person on Earth, in whatever region, a long-distance communication service, namely, the telephone, for the greater benefit of all communities and all nations.

Thus 1985, the 120th Anniversary of our Union, under the slogan of telecommunications for development, may also go down in history as the real starting point of the era of universal telecommunications.

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TELECOM 87

Telecom 87, the fifth in a series of world telecommunication exhibitions, will be held from 20th to 27th October 1987 at Geneva's exhibition and conference centre — Palexpo.

Under the theme *Communications Age: Networks and Services for a World of Nations,* Telecom 87 will bring together over 600 exhibitors from all parts of the world and will display, on some 65 000 square metres of indoor and outdoor space, the state-of-the-art in equipment and technology. Telecom 87 will also give a glimpse of the future in the rapidly evolving field of telecommunications through demonstrations of prototype equipment yet to come to the market. Telecom is for many manufacturers an occasion to unveil new products and to indicate what is on their R and D drawing board.

World telecommunications exhibitions are organised by the International Telecommunication Union in accordance with a formal opinion adopted by the ITU Plenipotentiaries, in view of their valuable role in keeping the members of the Union informed of the latest advances in telecommunication techniques and in publicising the possibilities of applying telecommunication science and technology for the benefit of the developing countries. ITU world telecommunication exhibitions are recognised as the world's largest and most universal telecommunication exhibitions.

Public and private sector operators, as well as manufacturers and suppliers of telecommunication equipment of 34 countries are already participating in Telecom 87. These are: Australia; Austria; Belgium; Brazil; Bulgaria; Canada; China; Czechoslovakia; Denmark; Finland; France; Federal Republic of Germany; German Democratic Republic; India; Indonesia; Islamic Republic of Iran; Israel; Italy; Japan; Republic of Korea; Kuwait; Libya; Malaysia; The Netherlands; New Zealand; Portugal; Saudi Arabia; Singapore; Sweden; Switzerland; United Kingdom; United States; USSR and Yugoslavia.

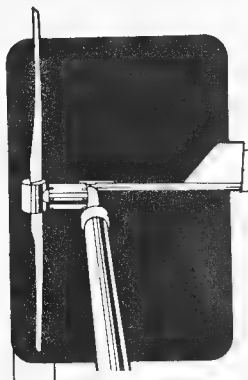
Amidst the many facets of Telecom 87, a number of other important related events will take place, such as Forum 87; Book and Audio Visual Fair; 1987 Golden Antenna Film Festival and Youth in the Electronic Age 87.

Unfortunately, the following portion of Andrews Communications Systems advertisment was omitted from page 7, May AR. Apologies are extended for the inconvenience caused.

- Full cross-band cross-mode duplex when Sat ($180), 2m + 70cm/6m fitted
- FT-2700(R)H 2m + 70cm 25W full cross-band duplex FM tcvr. 0.2uV sens, PMS 10ch mem, BONUS 8el 2m Yagi ..... ~~$1095~~ $999
- FP-700 p/supply ~~$449~~ $349 • FP-757HD 20A h/d p/supply ~~$579~~ $449
- ICOM IC-390, UHF all-mode 10W, BONUS 7011GR beam $849

. CA-33, 3el tribander, 2kW, 4m boom . . . $359 • CA-35DX 5el tribander 6m boom . . . $429 • CA-5 S/S 80-10m vertical . . . $149. Helicals $35/$39

* CORONA/JUMBO HP-240DX 200W o/p 3.5-30MHz linear $279
* NIKKO 10DFB coax, 2.1dB 100' @ 400MHz, $5.50/m "N" Plugs $12ea



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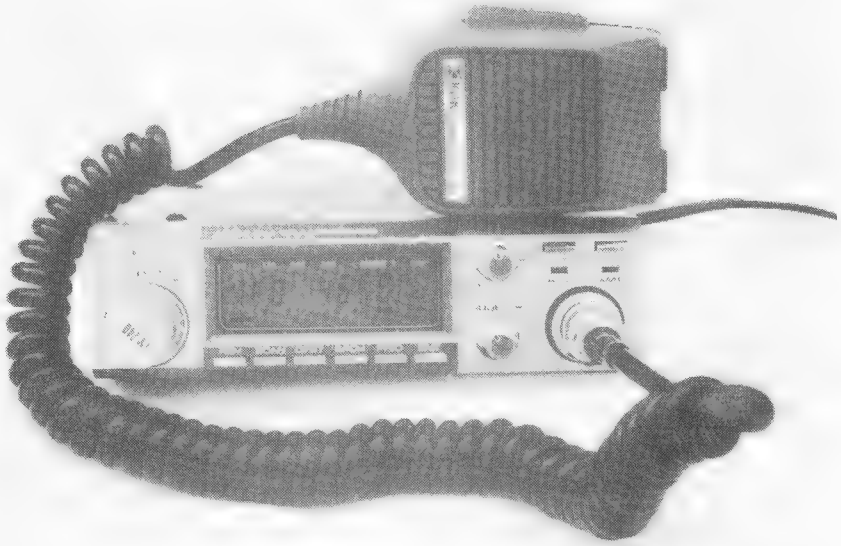
Equipment Review

Ron Fisher VK3OM
3 Fairview Avenue, Glen Waverley, Vic. 3150

KDK FM-240 TWO-METRE FM TRANSCEIVER



It is exactly 10-years since I reviewed a KDK FM transceiver. This was the FM-144-10SXR and was one of the first full-coverage synthesised transceivers to appear on the local market. Several updated models have appeared since, but unfortunately none have been offered for review. However, it is interesting to look at the developments that have occurred over that 10-year period. The most obvious is the size and weight. The new FM-240 is just a fraction over half the size of the original and just under half the weight.

In addition to this, it has the capability of delivering twice the power output of its predecessor.

KDK equipment has not enjoyed a good reputation for reliability over the years. The early models suffered from poor soldering and many of the original models that are still on the air have alignment problems, particularly in the frequency determining section. Let us hope that the current model has a better record in the years to come.

FEATURES OF THE FM-240

The FM-240 is a compact two metre FM transceiver, and is, in fact, the smallest 25 watt FM transceiver on the market at the moment, just beating the Icom IC-27 by a small margin in both size and weight. However, it possibly achieves this by omitting an internal loudspeaker which the IC-27 has, albeit of rather poor quality. The FM-240 is supplied with a microphone/speaker unit.

A multi-purpose LCD readout keeps the operator supplied with all the information ever required. Apart from the operating frequency, it indicates VFO or memory operation, repeater offset, reverse repeater operation, receiver S-meter and transmitter output indicator plus scan and call channel operation. Other functions are also displayed during the memory set-up procedure, as we will see later.

All memory information is retained when the DC supply is removed by a lithium battery. It appears that the programming of the CPU is not dependent on the lithium battery as it is with some other brands. An optional speech synthesiser is available to announce the operating frequency but was not supplied with the review transceiver. A tone squelch facility is included to provide a selective calling function. Repeater offset can be varied from the standard 600 kHz if required. Frequency and memory selection is from either the tuning knob on the front panel or via the up/down buttons on the microphone.

Transmitter power output is rated at 25 watts with high power selected or five watts low power.

ON-AIR

The FM-240 was used as both a fixed station and as a mobile and was found to be easy to set up and use once I understood the setting-up of the memory facility. The instruction states that the rig has *User Friendly Man Machine Interface*. I did not find this to be entirely true and the instruction book was not as clear as it could have been. I feel that most operators would use the transceiver principally in the memory mode — in other words, fill up the 16 memory channels with all normally used frequencies and only resort to the VFO for the odd unusual frequency.

To enter a memory, it is necessary to go through several steps for each. These in turn, frequency, tone selection for the CTCSS mode, scan mode required for that channel and finally the selection for simplex, duplex or cross (transmit facility on the frequency in the next memory). Once each of the above has been selected it is necessary to *hit* (their word), the enter button. The readout then displays the next command and the various alternatives are selected by turning the tuning control. When selecting frequency, two tuning speeds are available, either 5 kHz or 50 kHz and these are selectable with the *speed* button above the tuning control.

Although stated as such, the FM-240 has two VFOs. The *QSY* button enables the operator to select any other frequency away from the one in use, be it either a VFO or memory selected. The QSY switch then enables selection of either the original or the new frequency.

While all of this hitting and entering is going on, the transceiver beeps when you have done the right thing. The *beep* also alerts for activity on the priority channel. I thought that the beep was a bit anaemic in character and certainly not up to the Kenwood system which is amplified through the receive audio channel.

In common with many contemporary transceivers, the FM-240 has a LCD display. While it displays an incredible number of functions, I found it to be rather dull and lacking contrast. The rear illumination is an off-white colour and the digits a rather light black. Perhaps a change of the illumination colour may help.

Overall the front panel presents a very pleasant perspective to the user. One interesting feature is the recessed microphone connector but unfortunately the standard microphone plug is rather hard to tighten up. By the time it is tight, the knured ring is flush with the front panel, so it is advisable not to cut your fingernails prior to plugging in the microphone. A connector with a longer locking ring would overcome the problem.

In use the microphone/speaker was quite handy. Memory channels could be selected by means of the up/down buttons on the top, or a lock switch at the rear could remove this facility. As is usual with microphone/speaker units, the received audio quality left quite a bit to be desired and then there is the problem of what to do with it when it takes two hands to drive the car! Even a small external speaker produced very superior results.

For mobile use, a handy mounting bracket is supplied as a standard feature, along with a selection of mounting hardware.

UNDER TEST

Frequency Stability and Accuracy: Under hot or cold conditions, the FM-240 was within 100 Hz of the displayed frequency. The 600 kHz offset for repeater operation was also better than 100 Hz

Power Output: The power output was measured with exactly 13.8 volts DC applied to the transceiver. On initial switch-on and the transceiver at ambient temperature 18 watts was delivered, however, as the rig warmed up on receive only, this dropped to only 15 watts. With intermittent transmit periods, this dropped again to 13.5 watts. The results were very disappointing. Two different transceivers were tried with similar results. Low power out was checked at 2.5 watts. Again this was well below the specified power. It is suspected that the low power setting may be internally adjustable, but no information is supplied on this.

On the bright side, it was found that the supply voltage could be dropped to 11 volts with very little drop in transmitter power output. Current drain at 18 watts output was 4.9 amps and at 2.5 watts output 2.6 amps. With the transceiver hot and at the lower output power this had dropped to 4.5 and 2.3 amps respectively.

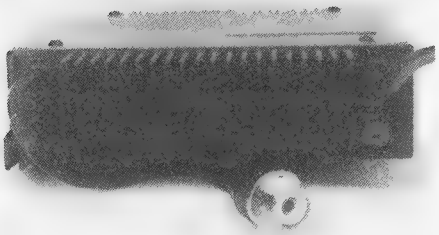
Transmit audio quality was rated as fair. Reports indicated that the speech was rather thin and edgy. Deviation setting appeared to be satisfactory.

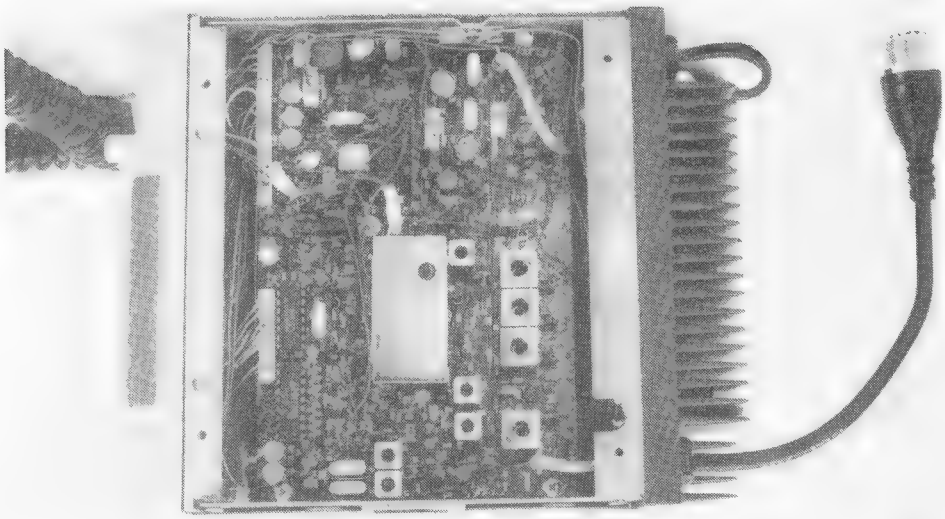
Receiver Tests: Receiver current drain was checked with 13.8 volts applied. With the receiver squelched 480 mA. With 250 milli-watts, audio output was 520 mA. The receiver extension speaker output was terminated with an 8 ohm load. Maximum power output was 1.75 watts with one watt at the onset of audible distortion (about five percent). At .5 watts output, distortion was measured at 1.5 percent.

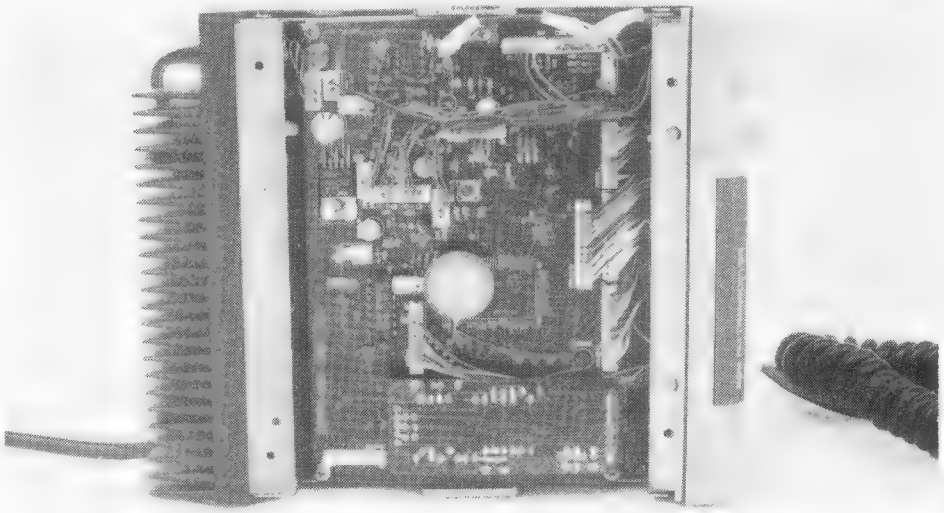
With a four ohm load, the maximum power output increased to 2.5 watts. Receiver noise was measured with a 100 micro-volts input signal with no deviation. This was -28 dBm unweighted and -32 dBm weighted.

Receiver sensitivity was next checked. At one micro-volts input with 1 kHz modulation and 3 kHz deviation, SINAD was 28 dB and S/N ratio 31 dB. A 12 dB SINAD figure was obtained at .6 micro-volts. The mute opened at .15 micro-volts. The S-meter on the FM- 240 consists of seven segments on the LCD display calibrated at S 1; 3; 5; 7; 9; +10 and +20. The following results were recorded:

S1 — 2 micro-volts; S3 — 6.3 micro-volts 4 dB; S5 — 10 micro-volts 4dB; S7 — 16.6 micro-volts 2 dB; S9 — 20 micro-volts 2 dB; +10 — 25 micro-volts 6 dB; +20 — 50 micro-volts.







This gives a total range of only 18 dB from S3 to +20. S units on two metres are apparently only 1 or 2 dB. It was also noted that the S1 segment would indicate when the squelch opened even when no signal was present.

As mentioned earlier, the FM-240 has no internal speaker. Instead, a microphone/speaker is supplied. The received audio quality is therefore rather thin due to the size of the speaker. It also limits the actual audio power output because of its inefficiency. In most applications, a reasonable quality external speaker does a far better job. It is a pity that KDK did not supply an external speaker as standard equipment as Kenwood do with some of their current model FM transceivers.

Perhaps the most disturbing aspect of the receiver performance is the spurious and cross-modulation responses. These appear to be a combination of both internally generated and those produced by external strong signals. To leave the transceiver scanning either the memories or a band scan produces a variety of peculiar noises which in many cases wipe out wanted signals. It also brought up the alarm for the priority channel when there was no signal present.

Just to prove the point on this, the transceiver was taken to a quiet country area, but much the same thing happened and, in fact, made it unusable for our requirements.

Instruction Manual: The instruction book has a total of six pages, of which the first is the introduction and index. It is purely an operations book. The text covers all aspects of using the transceiver, but there are no drawings or illustrations with the exception of a front panel photograph on the front cover. A series of display representations, say with the memory entry sequence, would be of enormous help. Apart from a circuit diagram, there is no technical information at all.

CONCLUSIONS

With so much in its favour, it is a pity that the FM-240 falls short in several important aspects. However, at the current price it represents good value. The review transceivers were supplied by Emtronics Melbourne.

The following test equipment was used to produce the test figures stated in this article. A Yaesu YP-150 and Marconi TF-957/1 Terminating RF Watt Meters; AWA F242A Noise and Distortion Meter; Daven Terminating Audio Output Meter; Ramsay CT-70 Frequency Counter.

EVALUATION AND ON-AIR TEST OF KDK-240 TWO-METRE FM TRANSCEIVER — Serial Number 000411

Appearance

Packaging
* * * Strong carton with foam inner section.

Size
* * * * At this time, the smallest FM transceiver on the market.

Weight
* * * * At only one kilogram, the lightest full feature FM rig.

External Finish
* * * Very clean attractive finish.

Construction
* * * Good quality circuit boards and neat wiring.

Front Panel

Location of controls
* * * Apart from some push-button controls, which are rather small and close together, most frequently used controls are quite accessible.

Labelling
* * Like some of the controls, the labelling is small.

LCD Readout
* * Although the readout presents more information than others, its readability is only fair. More contrast needed.

Receiver Operation

Memories
* * * * One of the best 16 memories with frequency, off-set, scanning mode and other information.

S-Meter
* * With a total range of 18 dB, only just satisfactory.

Spurious Responses
* KDK need to look carefully at this. Not vaguely comparable with current Icom and Kenwood equipment.

Sensitivity
* * Could be better, but over all spoiled by spurious responses.

Received Audio
* Quality and total audio output from speaker/microphone poor. Noticeably better with external speaker.

Transmit Operation

Power Output
* Not up to specifications, and even then drops off as the unit heats up. Should be much better.

Transmit Audio
* * Rather peaky quality. Fairly good intelligibility though.

Cooling
* * Heat sink runs rather hot. Location of transceiver should be carefully considered.

Manual

Owners Book
* Covers most operational functions in a fair way, but no technical information apart from a circuit.

Overall Rating
* * Just satisfactory. In other words, try one before you buy. Depending on what you have used previously, you may be either happy or very unhappy!

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FIBRE OPTICS

Satellites now used for inter-continental and international communications are being challenged by fibre optic technology.

The United States Cable and Wireless Company is now laying the first of two privately owned Trans-Atlantic fibre optic cables between New York and London.

The Overseas Telecommunications Commission is involved in submarine fibre optic cable, planned to run between the US mainland and Japan via Hawaii, being funded by a consortium of countries.

Australia and New Zealand will be linked by fibre optics in the next five years.

In Australia, fibre optics are playing a major role in the development of the country's telecommunications infrastructure. This technology is being used for high capacity inter-exchange links and to meet the needs of digital communications.

ICOM

MOST COMPACT HF TRANSCEIVER

IC-735

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TS-440S

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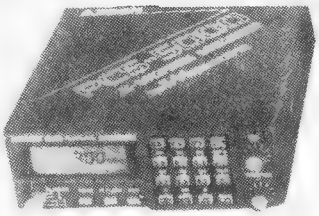
NEW!! PCS-5000

THE BRILLIANT NEW PCS-5000 2-METER FM TRANSCEIVER! C-MOS TECHNOLOGY AT ITS FINEST!



The Azden PCS-5000 features unprecedented wide frequency coverage, 20 channels of memory, two separate memory banks with separate or simultaneous scanning, two ranges of programmable band scanning, up to 11 non-standard offsets, built-in PL tone generator, and much more

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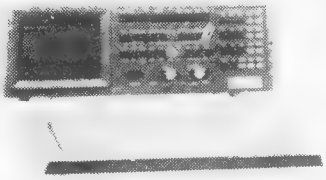

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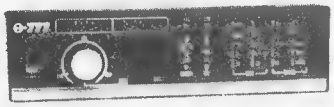

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SP-250 SWR/P 1.6-60 MHZ
SP-45M SWR/P 140-470 MHZ
CT-15A&N 50W Dummy Loads
CT-20G 2.5 GHZ Dummy Loads
CT-300 250 MHZ Dummy Loads
CH-20A&N Coax Switches
DF-72A 144/430 MHZ Duplexer
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W I A 50th ANN

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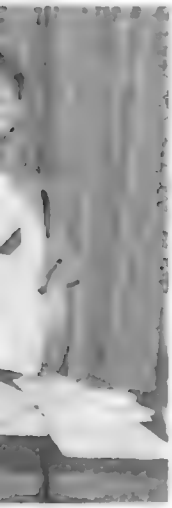
NNUAL CONVENTION



The 50th Annual WIA Convention was held in Melbourne over the ANZAC Weekend. Federal Executive Members, representatives from all Divisions and two guests from NZART were in attendance.

The Convention Theme was ***Take Amateur Radio and with it the WIA into the 21st Century.***

These photographs show some of the faces that were seen at the Convention.

1. From left: Tim VK2ZTM; Jeff VK2BYY; Wally VK2DEW; Graham VK5AGR; Rowland VK5OU and Don VK5ADD. 2. Max VK3ZS. 3. Kevin VK1OK; Alan VK1WX and Ron VK1KRM. 4. Rear: Greg VK3BGW, Bruce VK6OO (partialy hidden), Peter VK3AVE. Front: Neil VK6NE; Des VK3DES and Alan VK3BBM. 5. Brenda VK3KT. 6. Convention Attendees. 7. From left: Peter VK7PF; Joe VK7JG; David VK4YAN; Guy VK4ZXZ; Ross VK4IY; David VK4NLV and Terry ZL3QL (who represented the NZART together with Jock ZL2GX. 8. Executive members Bill VK3ABP; Ron VK1RH; David VK3ADW and Allan VK3AE. 9. Barry VK3XV; Tim VK2ZTM; Jeff VK2BYY and Wally VK2DEW.

VHF UHF — an expanding world

Eric Jamieson VK5LP
1 Quinns Road, Forreston, SA. 5233

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50.010	JA2IGY	*Mie*
50.020	JA6YBR	*Japan*
50.060	KH6EQI	*Honolulu*
50.075	VS6SIX	*Hong Kong*
50.109	JD1YAA	*Japan*
52.013	P29BPL	*Loloata Island*
52.020	FK8KAB	*Noumea*
52.100	ZK2SIX	*Niue*
52.200	VK8VF	*Darwin*
52.250	ZL2VHM	*Manawatu*
52.310	ZL3MHF	*Hornby*
52.320	VK6RTT	*Wickham*
52.325	VK2RHV	*Newcastle*
52.370	VK7RST	*Hobart*
52.420	VK2RSY	*Sydney*
52.425	VK2RGB	*Gunnedah*
52.440	VK4RTL	*Townsville*
52.450	VK5VF	*Mount Lofty*
52.460	VK6RPH	*Perth*
52.470	VK7RNT	*Launceston*
52.485	VK8RAS	*Alice Springs*
144.019	VK6RBS	*Busselton*
144.400	VK4RTT	*Mount Mowbullan*
144.410	VK1RCC	*Canberra*
144.420	VK2RSY	*Sydney*
144.465	VK6RTW	*Albany*
144.480	VK8VF	*Darwin*
144.485	VK8RAS	*Alice Springs*
144.550	VK5RSE	*Mount Gambier*
144.565	VK6RPB	*Port Hedland*
144.600	VK6RTT	*Wickham*
144.800	VK5VF	*Mount Lofty*
144.950	VK2RCW	*Sydney*
145.000	VK6RPH	*Perth*
432.057	VK6RBS	*Busselton*
432.160	VK6RPR	*Nedlands*
432.410	VK6RTT	*Wickham*
432.420	VK2RSY	*Sydney*
432.440	VK4RBB	*Brisbane*
1296.171	VK6RBS	*Busselton*
1296.420	VK2RSY	*Sydney*
1296.480	VK6RPR	*Nedlands*
10300.000	VK6RVF	*Roleystone*

No significant changes to the beacons this month. I have left out some of the ZL six metre beacons and left a couple around the centre of our band which should be sufficient to act as a warning if conditions are suitable. Additionally, the quite high level of ZL activity during the past two years assures contacts without a great deal of trouble. One of the best pointers to New Zealand contacts are still their Channel 1 television stations around 50.750 MHz and with many transceivers having a scanning mode fitted, it is quite easy to program coverage of the television station.

In the March issue of *The West Australian VHF Group Bulletin* there is a list of all the beacons operating in that State, a total of 17. In fact, if you include the two on 28 MHz, which are the only ones not listed in our beacon list. I note also that VK6RTT is shown as being at Port Samson, although I list it as being at Wickham. However, those two places and Karratha are all so close together I seem to remember when I was there in 1982, that it probably does not matter!

MACQUARIE ISLAND

Gil VK3AUI, sends a letter which reads in part, *"After a great flurry and instant preparation, the six metre gear returned to Macquarie Island with Sojo VK0SJ. Not only six metres, but two metres as well. Sojo has taken his own two metre transverter with him. A new keyer output, together with a two metre beam and an amplifier were got together over a weekend and shipped to Sojo. Frequencies are 52.150 and 144.150 MHz.*

"Sojo has been down south before, also to Heard Island with Jim Smith, so is a seasoned expeditioner.

"The additional gear and the original gear are courtesy of the following: VK3s NM; BDL; XQ; GJ; IO; YTB; AUQ and AUI. The rally around to get the six and two metre gear together was really something. I got the phone call late on a Thursday night and the gear was shipped on Tuesday! QSLs will be via VK7RM, QTHR."

It is to be hoped after all the effort that Sojo does make some contacts and in so doing, give some more amateurs an opportunity of working VK0. It would be great if it could be done on two metres, hardly anything seems totally impossible these days.

Gil goes on to say that *"lately I have been mainly on 144 and 432 MHz working aircraft enhancement. Have made it to VK1 on 432 and 144, and into VK2 on 144. Others involved include VK1BG; VK1GL; VK1VP and VK2DVS.*

"Was very pleased to work VK6AOM (Esperance) on 26/1 on 432 using only 10 watts. The 50 watt amplifier was away on loan. Also worked VK7ZIF on 14/3 on 432 and 144. Ian lives in Hobart."

Gil also passes on an experience he had with a Dick Smith GaAsFET preamplifier. As received it was off frequency and had a poor noise figure. Eric VK3ZSB, tuned it up to 0.6 dB NF, which indicates a good performance. It had originally been tuned on a spurious response. Quite a trap! Gil hopes to be using it soon. Although not stated, I presume it was a two metre preamplifier.

A further letter from Gil on 8/4 gives an update on the Macquarie Island business. Apparently the *Icebird* dropped the people off on the island and then headed off to other Antarctic bases and then (hopefully) went back to Macquarie to unload cargo, which included the radio equipment. About the end of April was the expected recall time.

Sojo VK0SJ, has been in contact with Gwen VK3DYL. He has regular scheds on Mondays and Fridays on 7.095 MHz with VK7HK. After contact they QSY. On 20 metres they try 14.120 MHz. Time, about 0900 UTC.

OVERSEAS

Steve VK5AIM, has recently returned from a trip to New Zealand where, amongst other things, he enjoyed rides on jet boats, helicopter, light aircraft and a ski-lift! The other things were his 75 contacts on his two metre hand-held, and was able to access most repeaters in the cities he passed through.

Steve also keeps me informed of happenings in the UK via *The Short Wave Magazine* and last month I was able to pass on some information about the relaxing of restrictions in the UK for use of the 50 MHz band (in fact, they seem to be even more liberal there than here in VK), but the Class B stations are understandably annoyed at not being able to use 50 MHz as some of those stations have been on the air for a long time. However, the DTI has invited the RSGB to re-open the topic of initial restrictions after a year, when the cumulative experience of operators will have revealed if there are really any interference problems.

The low power (100 W ERP) Belgian station in Antwerp with a vertical antenna is the nearest station to the UK and they are satisfied that, under normal propagation conditions, they are unlikely to suffer interference. With that in mind of course, we wish our UK brothers well and hope they enjoy six metres to the full.

Also from the same magazine I note that the annual two metre table has been included and G6XVV heads the list with 101 counties and 30 countries worked, although the second place-getter GW4TTU has 95 counties and 34 countries. Apparently counties count before countries over there! But 34 countries, even for a UK station is a very good tally. It would be interesting to know what the actual possible total of two metre countries would be.

The 70 cm annual table shows G6DER as having worked 70 counties and 22 countries, while on 23 cm he has worked 47 counties and 17 countries. What a difference our own geographical isolation makes when we attempt to work other areas on frequencies 70 cm and above, when compared with the opportunities obviously offered in Europe.

The Soviet satellites RS-9 and RS-10 are now complete and ready for launch any time. RS-10 incorporates a 15 metre up and two metre down transponder, which is unusual. Its 40 kHz bandwidth is indicated by beacons on 145.957 and 145.997 MHz.

THE NORTH WEST

Last month, I received my first copy of the newsletter of the *North West Radio Society*, which is edited by Dave VK6YA, at Wickham. In response to my request for further copies, the April issue duly arrived. Included in its pages is a list of newsletter recipients totalling 33, all located above the 26th parallel, plus one SWL and one rank outsider, VK5LP! I had no idea there were so many stations up there. Because of isolation, a lot of activity is on HF which is understandable, but the degree of VHF activity is considerable, especially with the availability of two metre repeaters.

Contacts have been made regularly between Karratha to Broome and Shay Gap by Jack VK6RJ and Grant VK6KE respectively, who have also received considerable assistance with ducting up and down the coast, accessing all repeaters down as far as Exmouth, this latter repeater was last heard in Perth on 27/3.

Ron VK9XJ is returning from Christmas Island but, before doing so, was making considerable effort to try and work to the mainland on six metres. At the VK end were VK6s KOJ; WV; AQ and YA. During all these attempts and while their beams were on Christmas Island, VK6YA worked three stations in Alice Springs with signals to S9 at 0300 on 31.3. In 1/4, Ron VK9XJ worked YC0AMC, in Indonesia at 1100 and S9.

Not content only with that contact, Ron VK9XJ kept firing signals to WA and finally, on 6/4 contact was established with Dave VK6YA at 0952. They used 10 metres as an indicator for band conditions, and persistent calls on six metres finally produced the desired result, with reports 5x1 exchanged both ways.

Andy VK6AQ, is looking to construct an SSB repeater, presumably on six metres, for use in the Port Hedland area.

EME NEWS

To say the least, news from the EME scene is very scarce. I note from *The Propagator* that Lyle VK2ALU has been touring New Zealand and one evening, whilst there *"they had the largest get-together of EME operators in the Southern Hemisphere"* with ZL2AQE, VK2ALU, ZL2AZQ (ex G4KNZ) and DK5AI, who operates two metres EME in Germany. He dropped in unannounced so fate must have been kind to such a gathering.

Lyle and his gang are still being plagued with security problems at their EME site; a further breaking and entering occurred recently but nothing was taken as they have been making a habit of recent times of taking the valuable equipment home again after a period of operating, bringing it back next time and setting it up. Needless to say, a most unsatisfactory way of working.

Although not known to a lot of people, I have, for some years been plodding along trying to complete a parabolic (dish) antenna for EME operations on 432 and 1296 MHz. Much of the constructional work has already been done on the parabola, with all 24 trusses being completed which, when assembled, would make a 32 foot (10m) dish.

About two years ago, I began to notice changes

in my walking gait and 14 months ago it became so serious that I was forced into a series of back operations which have been successful, but have left me with balance and walking problems; these would have been much worse except for extensive physiotherapy.

I am now forced into a situation of accepting that recovery can never be complete, and that the inability to lift heavy items and problems with balance particularly when on ladders or greater heights above ground (eg scaffolding, antenna masts, etc) must mean, more or less, permanent changes of life-style. I can do most things I used to, but the two problems mentioned earlier in this paragraph are very serious when it comes to completing a dish and climbing around its tower.

So, with much reluctance, I feel I must terminate the project and maybe do something else. It is a bitter pill to swallow, but then at other times I am thankful I am not in a wheel-chair, which was the alternative!

Accordingly, there must be someone out there who could afford to pay the much reduced price I am asking and be prepared to go on with the project and bring it to fruition, it would seem a pity for all the work so far done to have been wasted while the results of my labours languishes in a shed.

This is not a sales column, so I don't propose saying anything more other than to hope the project will continue in someone else's backyard, so that eventually I may be able to see what I started looked like when finished. Details in Hamads.

OTHER NEWS

The Mount Gambier Convention will be held this month so, once again, the friendly rivalry which exists between VK5 and VK3 will cause some hilarity. It is a good show and well worth keeping going as it presents one of the few opportunities for amateurs to get-together in the southern regions, particularly when often it has been possible for participants from both States to have worked one another on two metres or 70 cm.

You are reminded that Six Metres Standings updates are required on my desk by the 15th June for inclusion in the August issue.

The Ross Hull Memorial Contest will only be six months away by the time you read this. Despite all the on-air grumblings about the last Contest and my request for your ideas for the better running of the Contest, almost nothing in the way of ideas has appeared on my desk. What about something on changes to the scoring table which seemed to be the main bone of contention? I have a few ideas but would like to hear from some others too.

The photograph in this issue shows three well-known six metre operators, taken at the SMIRK Convention in 1983 by Graham VK8GB. Al KH6IAA has provided many a VK with his first KH6 contact, while Kazu JA1RJU has been a most successful operator with a great score of countries, whilst Clay WA4TNV/KL has been about the only contact available from Alaska on six metres that I know.

From Bill Tynan's *World Above 50 MHz* in *QST* for April comes the word that EI9D and some other Irish stations are receiving six metre permits, with much the same local restrictions as the UK amateurs mentioned by me last month. They have one further handicap in that they are only permitted operation outside of peak broadcasting hours. Operations with permits is also a variation from the Class A licenses of the UK.

Also from the same columns, OZ1PJJ, who is an active VHF operator in Denmark, is going to Greenland for two years and plans to work six and two metres from there. He plans to set up beacons on 50.045 and 144.902 MHz with the call sign OX3VHF. Might be fairly hard for us at the present state of the cycle, but stations in Canada and USA stand a chance of making contacts.

Bill also comments that during the big auroral opening of 8th February 1986, record-breaking DX on two metres was established, South America and Hawaii worked and a New England (USA) station was heard in Sweden on six metres! But we won't know all this good news until next month, but it certainly sounds interesting. And coming at a time so close on the heels of our own record-breaking two metre season last year. Very interesting indeed. But let us all be ready in VK for December 1986!

Tim Mills VK2ZTM, Beacon Co-ordinator, sent me a list of Australian beacons for comment, compiled from various sources including AMFAR. If the list is anywhere near accurate, and I suggest it isn't, then there are a lot of beacons operating, particularly on 70 cm, about which I know nothing! Call signs listed about which I am not aware of their status/operating schedule are VK1RBC, VK3RMB, VK3RTG, VK3RMV, VK4RTL, VK3RAI, VK6RTW, VK3RGG, VK4RAR, VK6RPB all on 70 cm; on two metres VK3RTG, VK3RMV, VK3RGG, VK3RCW; six metres VK3RGG, VK3RMV, VK1RCC; 50 cm VK6RPB; 23 cm VK1RBC, VK6RPB. As I give all operational beacons continuous publicity through my columns, I think State beacon co-ordinators should keep me informed of additions and changes promptly. If the present Amateur Radio listings are in error I ask to please be informed now so corrections can be made. If any of the call signs listed above are, in fact, in operation likewise, please inform me — there is nothing worse than an inaccurate beacon list. Please put pen to paper straight away.

By the time you read this I will have returned from several weeks touring with a caravan through Victoria and New South Wales. Whether I will have been able to make much contact with the amateur population will depend on a number of factors. I am taking enough *kept back* information for me to prepare these columns whilst away so next month may lack any real up-to-date information.

Closing with the thought for the month: *Those who burn the candle at both ends aren't always bright!* 73 The Voice in the Hills.

Al KH6IAA, Kazu JA1RJU and Clay WA4TNV/KL at the SMIRK Convention USA in 1983. All are well-known six metre operators.
Photograph courtesy Graham Baker VK8GB

NEWS FROM LONDON

RSGB MORSE TESTS

Now responsible for administering the amateur radio Morse test, the RSGB has announced details of how it proposes to run the new service. In overall control will be a Morse Test Steering Committee, chaired by a Chief Examiner, appointed by the RSGB in consultation with the licensing authority, the DTI.

Six Regional Examiners will be responsible to the Chief Examiner for test standards, and Senior Examiners and Session Examiners will look after the practical details at each test centre, and conduct the actual tests.

About 200-250 examiners will be required to begin with, who need not be members of the RSGB. They must, however, have a recognised Morse qualification at 20 WPM or over, or pass a test, conducted by an authority agreed by the DTI, at this speed.

The form of the test will remain unchanged from that used over recent years, sending and receiving 36 words (average five letters per word) in plain language in three minutes, and 10 five-figure groups in one-and-a-half minutes. There must be no more than four errors in the letters, and two in the figures in either sending or receiving.

Previous tests were available at 22 centres, half of which were coastal radio stations, often requiring a long journey for candidates. The new arrangement, apart from reducing the fee from 15 pounds to seven pounds, will make tests available at more convenient times and locations.

The RSGB hopes to have at least half of the planned 74 test centres available within six months, and the majority in 12 months. Centres will hold six tests a year, and a strict timetable will ensure that candidates not wishing to wait two months for a test will find centres in neighbouring areas available in alternate months for earlier appointments.

Although the scheme was due to start on 1st April, the RSGB did not publish its explanatory booklet until 11th April, so no examiners were actually in post at the *off*. Special arrangements allowed tests to be administered at the National Amateur Radio Convention at Birmingham on 5-6th April, and these will continue at other exhibitions and rallies as an interim service, while the full scheme gets under way.

Contributed by AR's London Correspondent, Tony Smith G4FAI.

QSP

VOICE MAIL BOXES

Digital technology has made it possible to store, retrieve and forward the human voice in a form called *voice messaging*.

Using a touch-tone telephone people can communicate via voice mail-boxes, send voice mail to multiple recipients, copy a message and send it to another person for action.

Businesses throughout the USA are using voice messaging and it has been introduced to Australia through AAP Reuters Communications.

On an average more than two-thirds of telephone calls fail to reach the desired party at the first attempt but voice messaging keeps the information flowing without the need for simultaneous conversations.

How's DX?

Ken McLachlan VK3AH
Box 39, Mooroolbark, Vic. 3138

With the demise of Halley's Comet to future generations, one can settle down to some serious DXing even though we are at or near the bottom of the Solar Cycle.

There is still a lot of good DX around, admittedly sometimes one has to be lucky, but a call on a dead band can, at times, produce astounding results.

Recently, I was listening on a somewhat 'dead' 20 metre band and I heard a VK call CQ over a period of a several of minutes. That amateur was kept busy with some very interesting QSOs for a couple of hours.

Ladies and gentlemen, give the occasional CQ and I am sure you will be quite surprised with the results. If everyone listens and no one calls, the bands appear to be dead. This is proved when a contest is on. Sometimes it is difficult to find a clear space to call CQ without interfering with another station.

AT IT AGAIN

Frank DL7FT, has been at it again. Same country, same call and it appears that the Greek Society, combined with the authorities, are far from impressed.

The authorities still maintain that he has no approval to operate from Mount Athos, however it appears that Frank has notified the ARRL that he has permission from the monks, or at least some of the monks . . .

The big question is, has he got written permission and if so from how many of the hierarchy in this area and, most of all, is it enough to convince the ARRL DX Desk of being an authentic operation.

Early reports from overseas were that Frank was due to visit Visalia to explain his actions. General advice is that he should watch out for a 'lynching' party. However, later overseas reports said he was not going.

It would be advisable to hold cards on a wait and see basis.

LAOS

XW3LX has been worked giving his QSL Manager as N6OT. Unfortunately N6OT is not aware of the honour bestowed upon him and it appears it may be another hoax.

APRIL FOOL'S DAY

ZA1AZ was heard operating from parts unknown on 1st April. Unfortunately he was giving W3HNK as his QSL source. As I have said before, the hobby could do without these types.

FALKLAND ISLANDS

Barry VP8WTW, is active from the Falkland's until the end of this year. Barry is employed by Wimpey-Taylor-Woodrow, one of two construction companies employed in updating the airport. Hence the unusual suffix.

Barry's station consists of an FT-757GX with 100 watts into a three element triband beam at six metres. He hopes to be active now on both 40 and 80 metres,CW and SSB.

QSLs either direct to PO Box 2, MPA, Falkland Islands or via the bureau to G4ZCN, his home call.

Other amateurs active from the area are VPs 8LP, ML, PTG (mainly CW) and WA.

CARDS

The ever-obliging Joe W3HNK, can get cards for those that are really desperate for the unusual USSR calls of EN4L, LY4L and UX4L. Joe is not the QSL Manager for these stations and they should be routed through the Box 88, Moscow Bureau from the respective WIA Bureaus.

WHERE IS HE?

Ken G3NBC, present QSL Manager for George VE3FXT, wishes for information on his whereabouts. He has received no logs but lots of cards which he cannot answer. Anyone hearing George could ascertain details of his whereabouts and advise him of Ken's predicament and also advising Ken would be appreciated.

ONE SIXTY METRES

Ron VK3BEE, a very keen enthusiast of this band, moved QTH to the wide open spaces at the beginning of the year. His new QTH is in the vicinity of Cockatoo, a delightful area in the Dandenong Ranges, east of Melbourne.

Ron's new QTH is plagued by 11 kV power lines. By careful selection of the symmetry of locating his low band dipole at 25 metres, he has alleviated the power line noise and has worked and heard a multitude of stations, working and listening on an irregular basis due to the chores of moving into a new home and of course having the hassle of working for a living.

Ron states, *"this year in particular, the Equinox season has been very good for stations on the east coast of Australia. Good regular openings and at times excellent conditions where signals into the USA, (particularly the east, central and west coast areas) have been S9 for up to two hours".*

Ron also reports that *"signals into Canada and Alaska regions with a consistent path into Japan, Eastern USSR and excellent signals into Europe have been experienced".*

What Ron has worked and heard this year up until the middle of April follows:

WORKED CW-AM:	DJ8WL, IT9ZGY, KX6DS, P29PR, RA3DOX and UA9AJX.
PM:	JA0CAK, JA1CGM, JA2XW, JA7TQK, JA9YBA, KH6AT, KL7Y, N1ACH, P29PR, UA0KBW, UZ0CWO, VS6DO, W1CF and W7TB.
WORKED SSB-AM:	P29PR.
PM:	N6TR/7, NK7U, P29PR, UZ0CWO, W0ZV, W0KEA and W7OEV.
HEARD CW-AM:	4X4NJ, DL9KR, G3BDQ, G3SZA, HB9BCI, KH6CC, LZ2CJ, RA3LBW, RF6QAI, RT4UA, SM6CPY, UB5ISG, UD6DC and XX9CW.
PM:	H44IA and VE3BV.
HEARD SSB-AM:	HB9ABQ, LZ1KOZ, UD5SDE and YU1AAO.
PM:	VE7BS.

Ron mentions that many more stations were heard in the mornings, some as late as one hour after sunrise, but they have not been noted.

Thanks Ron, for your contribution, good luck in settling in to the new abode and we hope to hear more from you when you raise the dipole to 35 metres and erect the pair of 30 metre verticals.

FO0XX ACTIVE AGAIN

Whilst writing these notes, a note from Kip W6SZN, arrived advising that the licence, landing permission and other formalities had been obtained for a five operator, five or six day operation onslaught from Clipperton beginning on the second of last month.

The operation is again under the banner of the Clipperton DX Club with the operators being AI6V, N7NG, W6OAT, W6RGG and W6SZN. Two stations were scheduled to be operating both modes 24 hours per day and particularly looking for those that missed out last time including the areas of Europe, USSR, Middle East and Africa.

Good luck to those that acquired it for a new country and it is to be hoped that the 'egoistical' operators that have it under their belt gave the newcomers to the DX bands a go.

SUDAN

ON7IT/ST, will be active from Sudan until the end of next month. QSL to the home QTH or via your bureau.

PIRATED CALL-SIGNS

Unfortunately, this is becoming a regular segment of the column. Anyone who worked 5U7AC after 1969, worked a 'pirate'. The call was held by Yves Anatole F9GY and has not been reissued although it has been known to be have been used, but not of late.

The call signs of Paul F8HH and his wife's allocations of TT8AK, 5U7AW, 5R8AK and 6W8AW are currently being pirated.

Another pirated call sign is 3A0GB. The call was legitimately used by W2GBX in 1971. Since 1978 no 3A0 licenses have been issued to visitors.

SAO TOME

Luis S92LB, (on my much wanted list) is still quite active and is apparently working most parts of the world excluding the Pacific, due to conditions. He is still appearing around 14.183 MHz at 2130 UTC and by all reports working into Europe and particularly the USA. QSL to his home QTH, he has no manager.

EXPLANATION

Did you work XEFJTW recently? Well, he was a legitimate call sign and here is the story as printed by Bob W5KNE, Editor of QRZ DX.

"During the CQ WPX Phone Contest there were several reports of a station signing XEFJTW/XE0, a call sign that was a bit unusual; some thought it was a phoney. AA5B, the operator of XEFJTW, tells the story:

'The call XEFJTW (yes, it is strange) was assigned to me by the Mexican government for my use while visiting the country until mid-1986. QSLs should go to my home address. The government has just recently established formal procedures for obtaining temporary radio permits and with any luck, call sign assignments will improve.

'I operated from El Sauz during the WPX Phone Contest using just a TS930 and an 80 metre dipole up at eight metres and made 520 QSOs on 80, 40 and 20 metres. At least 450 of the people I contacted asked for two repeats of the call, 200 wanted a detailed explanation, 100 accused me of being a pirate, and 50 refused to log the QSO (their loss, since I was the only XE0 on during the contest).

'Intentional jamming occurred but was infrequent. After 10 hours, I called it quits and drove home (a 950 kilometre drive) to be with my family for Easter'."

An interesting story and it pays to log all calls one receives. One never knows when it could be a good one.

SIXTY YEARS

The Dominican Republic are celebrating 60 years of the hobby by using the special call HI60RCD until the end of the year. For both modes QSL to PO Box 1157, Santo Dominica, Dominican Republic.

INDIAN OCEAN EXPEDITION

Joe WA6VNR, is still looking for amateurs and their wives to join him and his wife on a DX tour of the Indian Ocean. Only adventurers need apply to Joe at his Call Book QTH.

Whilst on the subject of the Indian Ocean it is hoped that the Indian authorities, with the assistance of their Prime Minister Rajiv VU2RG, can activate the Andamans, as it is a much needed country and is climbing high on the wanted list. Maybe Joe, if he gets his party together may be allowed to operate from there or the Indian Society maybe able to launch their own onslaught to assist the DXers. It would create excellent international relations with all countries and would have the backing of the major DX Foundations.

See the Contest Column, this issue, for the positive steps Ian VK5QX, has made in an attempt to get Andaman and Nicobar on the air. This is an approach from a different angle — let's hope that it may bring some results!

WARC BANDS

Fred VK4RF, reports that he has notched up 80 countries on 10.1 MHz running 85 watts into a dipole at nine metres.

Some of the more interesting countries Fred has contacted on this band are: *4Z4, 5B4, 8Q7, 9HI, 9Y4, C30, CT2, CX, EA6/8 and 9, EI, FG, FM, GJ, GU, GB0, HC/8, IS0, J28, KP4, OA, PJ, SV, TI2, TK6, T30, VP2A, VP2M, VP9, VS6, YV, ZC4, ZL7 and 8 and ZS6.*

Congratulations Fred on a sterling effort and it shows that low power and persistence will get through.

TURKISH AMATEURS

The Turkiye Radyo Amatorleri Cemiyeti known as TRAC have forwarded a list of official Turkish Amateurs as at 31/10/1985 and claim that all others are pirates. (Please allow for updating before condemning any amateur).

OFFICIAL CALL	LOCATION	EX CALL	NAME
TA1A	*Istanbul*	TA1UA	Unal
TA1B	*Istanbul*	TA1SU	Salim
TA1C	*Istanbul*	TA1ZB	Metin
TA1D	*Istanbul*	TA1MB	Kadri
TA1E	*Istanbul*	TA1AS	Aziz
TA1F	*Istanbul*	TA1NAG	Tuncer
TA1G	*Istanbul*	TA1KD	Kadri
TA1H	*Istanbul*	—	Hasmet
TA1I	*Istanbul*	TA1ES	Emre
TA2A	*Ankara*	—	Cemal
TA2B	*Ankara*	—	Fethi
TA2C	*Ankara*	—	Teeman
TA2D	*E.Eregli*	TA2AK	Ahmet
TA2G	*Ankara*	—	Suha
TA2J	*Gebze-Ist*	TA2FM	Fazil
TA2I	*Ankara*	—	Rasim
TA2L	*Ankara*	—	Erdogan
TA3B	*Izmir*	—	Mustafa
TA3E	*Izmir*	—	Ergun

Cards for these amateurs will be sent and accepted by the TRAC Bureau.

ETHIOPIA

Correspondence between between Franz DJ9ZB, and Tensay ET3PS, has resulted in Tensay using the Club call ET3PG, as ET3PS is not yet acceptable to the ARRL DXCC Desk. It appears that Tensay is quite unrestricted and has no limitations on using the club call.

ANGOLA

Gerson PY1APS, is employed by a company building a power plant in Angola. Gerson had occasion to visit the site and applied to obtain operating permission directly and through his Embassy. The reply was no and the official letter from the Angolan Ministry of Transport and Communications included the wording *'. . .Amateur Radio operation is not permitted in the Angolan territory.'*

Question? *Where does that leave D2BCW and are his contacts legal?*

NOT QSL MANAGER

Dave VK3ADD, is not the Manager for Trevor VK0TB, who operated from the Antarctica in 1977. Trevor's QTH is 69 Alma Street, Chadstone, Vic. 3148.

Also Maryanne WA3HUP, is not the QSL Manager for either 3A2CQ or 3A2CZ.

GENUINE ACTIVITY?

Yoshi JA1UT, was due to visit Laos last month. *Can we expect to hear a genuine XW on the air shortly?* Yoshi was the instigator of getting XU1SS on the air after a visit in 1983.

NEW BY STATION

A new BY station will be activated from Suzhou in the Jiangsu Province. JA9AG and eight other JA operators will attend the opening ceremony from 6th to 12th of this month. For the initial opening QSL to JA9AG. The prefix will be BY4 and the suffix is unknown.

BITS AND PIECES

Chile is using the new 3G prefix. * * B5QA quite active from BY-land. * * Two HS club stations were active during the WPX Contest. * * The H5AY operation was assisted by ZS4s DC, JB, KK, MG and NS. QSL to ZS4NS. * * VQ3CE purported to be signing out of Tanzania. Quite doubtful as the VQ prefix is assigned to Great Britain. * * Watch for Rag JW7FD, who will be active from Bear Island until the end of the year. * * As from 1st February the JT0 prefix is not available to visitors. Instead they will use their home call /JT. * * UD6KZ, heard on 20 metres SSB, is in Oblast 003. A rare one! * * It appears Baldur DL0MAR/9G and his XYL have gone QRT. *Where will they appear from next?* * * HF0POL is again active and it is expected he will be QRV at least until the end of the year. */* At least one of G3KQL/TT8 cards has not been accepted by the ARRL DXCC. Reason — insufficient documentation. * * Lloyd and Iris Colvin's trip through Southern Africa netted in excess of 50,000 contacts. Quite an effort in view of some of the problems they faced. * * The operation signing . . ./IA5 was from Monte Cristo Island. * * FT8YA is active from Adelie Land. * * The OZ 160 metre allocation is from 1.830 to 1.850 MHz, mode CW and 10 watts of power. * * ZA2AOP, may be the call if the OK operation gets off the ground in September. (September is a long way off . . . VK3AH).

HEARD AND WORKED ON THE EAST COAST

10 METRES
JA7DLE* and UA0ALK*.
15 METRES
G0CMV/M*
20 METRES
9H1EU, 9J2LC, AH2BE, DL2ZAD/KH8, HK3SY*, HK9BRW*, JW0A*, JY5IH, KG4TR, UV1OO/FJ*, ZC4MR, ZK3RW*, ZS3GB and ZS3JS.
40 METRES
CU2CH, CX9AU, EA4KR, EA4BVE, EA4CDZ, EA5AD, EA5BW, EA5FHE, F6ARC, F6BMV, F6DZU, F6FEF, F6FGY/TK, G2BJK, G2DMR, G4AMT, G4FAM, G4FIV, G4LVQ, G4NSD, HB9RG, I1TBE, I5GJK, I5ICY, I5IGQ, I5YBZ, I6VYV, I8IGS, IK8CNT, IX1BGJ, J73LC, LU3ABX, LU9FFA, ON4TY, ON4AAC, PY1YD, SP2GE/MM, VY1CW, XE1EGF, XL7SV, YS1RRD and ZL7AA.
**Denotes CW operation.*

QSL VIA

3C1MB:EA7KF; 3G3DX:CE3ESS; 3D2JA:JJ1TZK; 3X0HSH:DK8PR; 4N7ZZ:YU7FIG; 5B4LF:KA3FIB; 5B4MF:IK8DYD; 5H3HM:VE5VJ; 5H3ZO:K0LST; 5R8AL:WA4VDE; 5W1CW:ZL1AMO; 5W1FJ:JJ1TZK; 5W1FP:ZL1BQD; 5Z4EO:DJ5RT; 8P6AR:N6AUV; 8P6GG:N4CTC; 9J2LC:YASME; 9X5DH:DK6EA; A35EA:ZL1AMO; A35ZK:JJ1TZK; C21NI (Feb/March):JJ1TZK; JW0A:SP2HMT; CT1BOH:W3HNK; CW8AC:CX2CS; DL3NAZ/CP8:CP8AL; EL2AY:N5GAP; EL2EF:KM8E; F6DCL/TL8:F6KGI; FO8BI:F6HSI; FO8FO:F2BS; FV6NDX:F6AJA; FV6PAX:F8BO; HK0BKX:HB9NUL; HU0X:YS1RRD; HV3SJ:I0DUD; IK4CXL/IA5:I5NQZ; J39BS:WB2LCH; JA1ZLO/JD1:JM1LPN; JR4ZQH/4S7:JR4ZQH; JW0A:SP2HMT; JY9RL:WA6POZ; KD2HE/VP9:KD2HE; KX6DS:N4NO; PJ0B:K3EST; PQ8ZZ:PY4AG; SM7CRW:W3HNK; T21TA:N4FJL; T21ZK:JJ1TZK; T30AC:AA6BB; TE1W:TI2KD; TR8SA:F6FNU; UV1OO/FJ:UA9LBR; V47K:WB0MIV; V47M:NI0E; VK0SJ:VK7RM; VQ9QM:W4QM; XEFJTW:AA5B; XQ1ADG:CE1ADG; XX9CW:DK7PE; YT2AA:YU2SEV; ZK1XR:JJ1TZK; ZK1XU:W7TB; ZK3RR:ZL1BQD; ZK3RW:ZL1AMO; ZS6BCR/Z2:ZS6BCR.

QTHs YOU MAY NEED

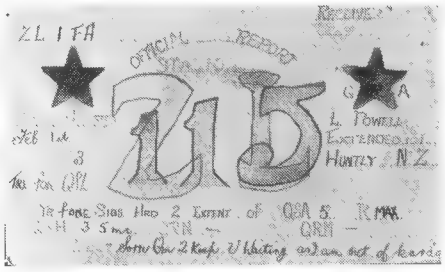
5Z4BP	PO Box 73029, Nairobi, Kenya.
9L1IS	PO Box 1269, Freetown, Sierra Leone.
BY5RA	PO Box 730, Fuzhou, Peoples Republic of China.
FG5BM	PO Box 1249, Point-a-Pitre, Guadelope, French West Indies.
FR4DN	Philippe Mondon, CD16, 97425 Avirons, Reunion Island.
H44IA	PO Box 219, Honiara.
HK9BRW	PO Box 86, Leticia, Amazonas, Bolivia.
J28EG	PO Box 2417, Djibouti, Republic of Djibouti.
J73LJ	PO Box 245, Roseau, Dominica, Windward Islands.
JY8XY	Robert Johnson, RT 1, PO Box 173, Endeavor, WI 53930, USA.
KG4TR	PO Box 41, NSGA, FN PO, New York, 09593, USA.
V3GJ	PO Box 286, Belize City, Belize, Central America.
V85AK	PO Box 2623, BSB, Brunei.
VP8VK	G4RFV, 38 Waterloo Road, Darbys Corner, Poole, England.
ZK1RE	PO Box 47, Raratonga, Cook Islands.
ZS3JB	PO Box 1165, Tsumeb, 9000, Namibia.
ZS3JS	PO Box 1165, Tsumeb, 9000, Namibia.

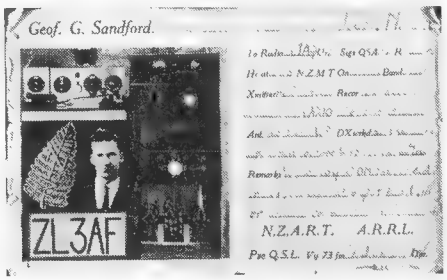
THANKS

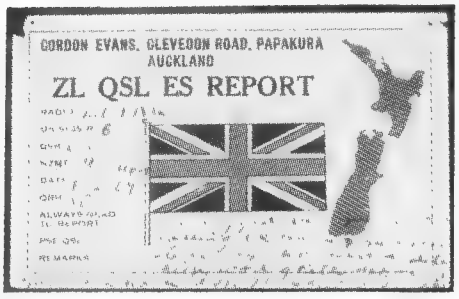
Sincere thanks are extended to the following: The Editors of weekly, bi-weekly and monthly newsletters including the ARRL NEWSLETTER, BARG, CQ-QSO, DX FAMILY FOUNDATION NEWSLETTER, INSIDE DX, JAN and JAY O'BRIEN'S QSL MANAGER LIST, KH6BZF REPORTS, LONG ISLAND DX BULLETIN, NEWSLETTER OF THE VIENNA INTERNATIONAL RADIO CLUB, QRZ DX, RSGB DX NEWS and THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER. Magazines including, BREAK IN, cqDX, JA CQ, JARL NEWS, KARL NEWS, QST, RADCOM, VERON and WORLDRADIO.

Members who have contributed include VKs 2PS, EBX, 3YL, ADD, BEE, DYL, 4RF, 5QX, AKH and G3NBC. Other contributors include the Turkiye Radyo Amatorleri Cemiyeti, Westlakes Amateur Radio Club, W6SZN and ZLs 1AMM and AMN. Thanks to one and all who have made this column possible.

From ZERO BEAT — March 1985







The above QSL Cards are from the Antique Department and are presented courtesy of Peter VK3KAU.

Spotlight on SWLing

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas. 7250

Recently, I obtained a subscription to the International Listening Guide. This is a basic directory of international broadcasting, being published four times a year to coincide with the propagational alterations. I must state that I have found it invaluable, especially in the identification of broadcasters. *How is this possible?* Well, the survey is divided into two sections: the first being a summary of English language broadcasts from the External Services, while the second section is a World Frequency Survey.

As I am writing this, we are at the height of the Libyan Crisis. By using this publication, I have been able to follow subsequent developments. For example, by looking up the entries in the first section, I was able to find what broadcasters were having a newscast at that particular hour. Once I have found the station I require, it is easy to use the second section to ascertain what frequencies are being utilised, particularly to this region. Say at 0400 UTC, we see that the *Voice of Turkey* is having an English newscast on 9.560 and 9.730 MHz. The first channel is clear, but there is another station on 9.730. By looking up that channel in the World Frequency Survey, we see that *Radio Havana* is broadcasting in Spanish. It also tells me that Ankara is broadcasting on that channel to Asia.

JAMMERS ARE ALWAYS THERE

As one scans across the broadcasting allocations, frequently jammers are heard, with their distinctive CW identification. On 9.520 MHz, the jammers are seemingly ever-present, making it impossible to identify who is being jammed. The survey tells me that it is Radio Liberty, the US backed clandestine station in Russia. The service is almost continuous, explaining why the jammers are always there. The survey also gives the transmitter sites and what operational hours they use. The West German sites are almost exclusively used on 9.520 MHz, yet between 1900 and 2100 UTC, RL uses their Spanish site.

The International Listening Guide is compiled and published in West Germany by Bernd Friedwald. These are put together after the commencement of each broadcasting period, compiled from monitor's observations and the survey is then mailed out in a fortnight to three weeks of the commencement. The SWL/DXer than has, at their fingertips, up-to-date information. Each copy costs $A6, yet a subscription for the whole year costs $A20.

SURVEYS

Personally, I have found it superior to the *World Radio TV Handbook*, as far as up-to-date, accurate schedule information. The handbook has a plus in that it contains information on the smaller broadcasters, servicing domestic audiences which is not generally contained in the ILG surveys. However I mainly now rely on the ILG observations, supplemented by monthly DX loggings from the Southern Cross DX Club and Australian Radio DX Club.

Looking at the surveys, I am somewhat amazed to find that a channel will sometimes have two broadcasters, targeting the same area, with the same language at identical times. On 11.810 MHz, we find that Bucharest and Radio Korea are both beamed to South America in Spanish. This is at 2400 UTC. There are other instances that are easily heard, and one has to listen carefully before being able to correctly identify the station. It must make it difficult for listeners within these target areas. On the whole, there is co-operation between the various broadcasting organisations, yet this occasionally does not happen. This happens where the countries often don't afford diplomatic recognition of each other.

If your are interested in the *International Listening Guide*, the address to write to is: DX Listeners Service, Merianstrasse 2, D3588 Homberg, Federal Republic of Germany, or to their Australian representative — Howard R Moore, 33 Brooklyn Avenue, Salisbury, SA. 5108.

OFF THE AIR

And talking of changes, there was an outcry recently after the BBC World Service announced that it was terminating the popular program — *Letterbox*. It was scheduled to be aired for the last time at the end of April. This program was a forum for World Service listeners to air their views regarding the output from Bush House — the home of the BBC External Services. At the deadline time (mid-April), the BBC has not so far announced any change of heart, although they indicated that they may review a replacement program in future. In mid-March, *Monitor* was also taken off. This was a summary of what the various electronic media were saying on current events. So it does appear that there is a new broom sweeping Bush House.

Incidentally, there has been a re-timing of one of the releases of *Waveguide*, a program that is to assist the listener to hear the BBC World Service. It has been re-scheduled from 0430 UTC Wednesdays to 0445 Mondays. The other releases at 0750 Sundays and 1115 Tuesdays are unaffected. The *DX-Partyline* on Radio HCJB recently celebrated its 25th Anniversary, on the 19th May. You can hear it at 0930 UTC Mondays and Saturdays and at 0700 UTC on Wednesdays.

SIGNALS NOTED

Around mid-winter, it is possible to hear stations on the 41 and 49 metre bands around 0200 UTC, which corresponds to my local midday, in Tasmania. Signals from Europe are coming in across, or close to Antarctica. I realise that SWL/DXers in VK4 and VK8 cannot hear this unusual propagation mode, because they are too far north, although I have been reliably informed that they have been heard on the Gold Coast. When I was in Brisbane about three years ago, it was evident to me that these signals were absent, although I was observing them in Tasmania. Signals from Asia were noted, which were absent down here, yet that isn't really surprising, considering the location of Brisbane.

DX CONVENTION

The Australian Radio DX Club will be holding a DX Convention on 7th to 9th June, at the Rawson Holiday Resort, in Gippsland. This is about two hours drive from Melbourne, in the foothills of the Great Dividing Range. I believe that there will be ample opportunity to do some DXing as there are no powerlines or interference, an ideal location. Besides that, I believe as well, that there are to be scenic trips arranged to nearby historic towns, such as Walhala. We wish all participants a good weekend, with plenty of DX catches.

The accompanying photograph this month is of Don Rhodes VK3BMB, of Yarra Glen, Victoria. I met him at last year's Convention. Don is originally from Leeds, York. He is a monitor for *Deutche Welle* the German External Service. We chat occasionally on 80 metres, swapping our observations.

Well, that is all for this month. All the best of winter listening and good DX. — Robin VK7RH.

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VE3SR LOSES COURT BATTLE

The judge hearing the suit brought against Jack Ravenscroft VE3SR, seeking damages for interference to a neighbours electrical appliances from his amateur radio operations, has decided the case in favour of the neighbour bringing the suit. (See earlier report, AR April. p8).

The judge granted a permanent injunction prohibiting VE3SR from transmitting radio signals from his property and assessed damages and costs amounting to Can$2558. The judge said that while Jack had a legislative right to use his equipment because he was licensed by the Canadian DOC, if he should interfere with the enjoyment of his neighbours electronic equipment then he is liable to a civil suit for nuisance. The unexpected outcome of the suit is a severe blow to the amateurs of Canada, and poses a threat to the operators of any licenced radio transmitters in that country.

VE3SR was given 10 days in which to appeal against the decision.

From The ARRL Letter, 11th April 1986

AMATEURS HELP HOMELESS AND HUNGARY

Amateur radio was selected to provide communications for *Hands Across America*, on 26th May 1986. It was anticipated that 6 000 000 Americans would join hands in a line stretching over 4000 miles from New York City to Los Angeles. A group of people, which sponsored the US Aid for Africa last year, and co-sponsored by Bill Cosby, Kenny Rogers, Pete Rose and Lilly Tomlin, designed this benefit to aid the homeless and hungary in America. The National Communications co-ordinator was Charlie Kosman WB2NQV.

In 1984, Charlie organised communications for the well-known Olympic Torch Run across America, which last 82 days in the longest running net assembled for a special event.

For Hands Across America, Charlie needed amateur operators every mile of the 4100 mile link, as well as 210 command posts — between 4300 and 4500 amateurs equipped with VHF and/or UHF portable equipment. Each participating amateur was expected to be available for about six hours.

From The ARRL Letter

SILENT KEY

It is sad to report the passing of Nick Percival 9Y4NP, President of the Trinidad and Tobago Amateur Radio Society and an active supporter of the IARU.

During preparations for WARC 79, Nick persuaded the Telecom Administration in Trinidad to fully support the IARU position, and in so doing, guaranteed that the IARU original position was actually included as a proposal from a member of the ITU. Nick's efforts, coupled with those of amateurs in other countries, meant that at WARC 79, amateurs not only retained their allocations, but also obtained new ones.

Many Australian amateurs would be familiar with Nick on the HF bands, and he was a guest at the WIA 75th Anniversary Dinner last November.

From The ARRL Letter

Contests

Ian Hunt VK5QX
FEDERAL CONTEST MANAGER
Box 1234, GPO, Adelaide, SA. 5001

CONTEST CALENDAR

JUNE

14-15	*All Asian Phone Contest (Rules this issue)*
21-22	*1985 VK Novice Contest (Rules May issue)*
28-29	*ARRL Field Day Contest*

JULY

5- 6	*Venezuelan SSB Contest*
12-13	*IARU Radiosport*
19-20	*Colombian Independence Contest 1986 (Rules July issue)*
26-27	*County Hunters CW Contest (Rules May issue)*
26-27	*Armadillo Run CW (See May issue)*

AUGUST

9-10	*European CW Contest*
16-17	*Remembrance Day Contest*
23-24	*All Asian CW Contest (Rules this issue)*

SEPTEMBER

13-14	*European Phone Contest*

OCTOBER

4- 5	*IRSA World Championship*
25-26	*CQ WW DX Phone Contest*

NOVEMBER

- 8	*Australian Ladies Amateur Radio Association Contest*
8- 9	*European RTTY Contest*
29-30	*CQ WW DX CW Contest*

VK NOVICE CONTEST

I point out specifically the VK Novice Contest for this year, that as this is the first time it has been held in June and should provide somewhat better conditions on the 80 metre band. I hope that many more entrants in this contest will result from this change in date. I would also hope that there will be many more novice operators using their skills at CW during this contest.

As written up in a recent issue of this magazine there has been quite some criticism of novice operators on this score. Remember that the speed for CW is limited under the rules to a *maximum of 10 WPM.* This does not mean that you have to operate at that speed, so even if you are pretty slow give it a try. I know you will be surprised at just how quickly your speed comes up after even just 30 minutes or so of operating. Remember that this is a contest primarily for novice operators and that this being so, all in the contest will be prepared to help you as much as possible. Remember also, you cannot hope to win the trophy unless you enter both a phone and CW log.

As I write these notes, the HF bands seem to be looking up, propagation wise, so I hope that this trend continues thus allowing you much more fun in both your contesting and general operations. There is certainly some merit, where DX is concerned, in operating during contests as you can often run across that choice one which you have been looking for.

By the time these notes are printed, the 1986 Annual Federal Convention will have been held and I trust that, as a result, you will have been able to learn some more about ideas which, as Federal Contest Manager, I would like to see implemented. My report this year covers quite a few items. Amongst them are included: A set of *guidelines for certificate issuance, Remembrance Day Contest.* (I would like these to be extended generally to cover other contests as well). The reason for this item is an attempt to make certificates of more value to the recipients. Detailed rules for the *HF Contest Championship.* Amendments to the *Federal Contest Manager's Terms of Reference.* A request that further improvement of the Remembrance Day Contest scoring system be considered. That the matter of certificates and trophies for non-members be determined. That whether or not the Ross Hull Contest should be continued, be dealt with at the 1987 Federal Convention, thus allowing entries for the next Ross Hull Contest to be taken into account. That *two* trophies be provided for Contest Championship purposes, namely one for Phone and one for CW. I have also requested that the Federal Executive approach various commercial organisations with a view to the sponsoring of trophies for winners of various sections of contests.

So it will be most interesting to see just what does happen to these various items at the Convention. I have also asked that the material provided by me be made widely available to members through the magazine, divisional broadcasts and meetings, etc. If you have an interest in any of these items, why not ask either your Federal Councillor or Divisional Council for more information as they have been supplied with complete copies of all the information I have submitted.

You will note from the Contest Calendar above that I have included the date for the ALARA Contest, 1986. I have been asked by Marlene VK2KFQ, who is the ALARA Contest Manager, to provide as much publicity as possible regarding this contest. So whilst providing this advance notice I would suggest that the best way of publicising the contest is for all ALARA members to tell everyone they contact all about the contest. I will be providing a copy of the rules nearer to the contest, probably in the October issue, however I can only ask that the rules be printed once as space in the magazine is at a premium.

I can tell you at this stage that the contest features both phone and CW operation and runs for 24 hours of the UTC day of 8th November. It would seem to be an ideal way of making a lot of YL contacts towards some of those YL awards which are available. As FCM I could not afford to ignore any requests from the YL organisation as I am well aware of the old saying about the fury of a woman scorned. I am most supportive of those ladies, who do so much to assist us mere OMs, particularly when it comes to such things as social functions, providing food for us on field days, etc.

Harking back to further details of the ALARA Contest, I must also mention of the *Mrs Florence McKenzie CW Trophy* which will be awarded to the Australian YL novice operator with the highest CW score. So there is certainly something for those concerned to think about. The winner need not necessarily be a member of ALARA either.

On another note, I wanted to add a personal side to this issue of the column. My parents-in-law normally reside in the UK. It happens that at this time they are visiting here with us, this being their first trip to Australia. It is also exciting for them to be able to meet their great-grandchildren for the first time and even more so is the fact that while they are here, they will be celebrating their Golden Wedding Anniversary. It was thus most interesting for me to be able to organise a QSO with a G-station, G4WMP who always has a most outstanding signal, and have them receive congratulations over the radio direct from England. It is possible to have amateur radio fit in with family life despite the fact that sometimes people might doubt that it can be done.

Once again, winter will be upon us and I hope that all the outside work needed to make antenna systems safe and water-proof, etc has been done. I also trust that while the weather might keep you inside for a while, you will be able to enjoy the contests which come up as well as your other general operating. You will probably will also be able to find some time to plan more for even bigger and better antennas and more extensive contest operations in the coming year.

During a recent visit to the United States, I had the pleasure of meeting a most charming gentleman by the name of Doctor Charan Singh, whilst on a flight from San Francisco to Los Angeles. Doctor Singh was appointed Regent of Jammu and Kashmir by his father, Maharajah Hari Singh, on the intervention of Prime Minister Pandit Jawaharlal Nehru. He was then only 18-years of age. Thereafter, from 1949, he was continuously Head of the State for 18 years — as Regent, as elected Sadar-i-Riyasat and as Governor. His was a unique instance of the last representative of the old order becoming, by the will of the people, the first representative of the new. During these years he was strikingly successful in fulfilling the delicate and onerous duties that devolved upon him as head of one of the crucial States of the Union.

In March 1967, soon after India's fourth General Elections, Doctor Karan Singh was inducted as a member of the Union Cabinet headed by Prime Minister, Indira Ghandi. At 36-years, he was the youngest person ever to become a Central Cabinet Minister. On this appointment he resigned his governorship and stood for election to the Lok Sabha from the Udhampur Parliamentary Constituency in Jammu and Kashmir on behalf of the Indian National Congress. He was elected to Parliament with an overwhelming majority and was re-elected from the same constituency in 1971, 1977 and 1980, thus proving his hold over the hearts of the people, despite drastically shifting political results on the national scene. He was first assigned the portfolio of Tourism and Civil Aviation, which he held for six years. In 1973, he moved to the crucial portfolio of Health and Family Planning and in 1979 assumed the portfolio of Education and Culture in the caretaker government. During his tenures as Minister, Doctor Karan Singh neither drew any salary, nor lived in government accommodation.

When the issue of abolition of princely purses and privileges came before Parliament, Doctor Karan Singh was the only former ruler to voluntarily surrender his privy purse and to put the entire sum into the Hari-Tara Charitable Trust, named after his parents, in the service of the people of India. He has converted his former palace in Jammu, known as Amar Mahal, into a museum and library, which was dedicated to the nation by the Prime Minister in 1975. This institute has a priceless collection of Pahari paintings and also Doctor Singh's personal library of about 20 000 volumes, built up by him over the last 30 years. He also looks after a number of other trusts which administer over 100 shrines and temples.

Doctor Singh has excelled in the academic field and in 1957 passed the MA examination of the Delhi University with a First Class First in Political Science, creating a University record which is still unbroken. He then earned his Doctorate by writing a thesis on the Political Thought of Sri Aurobindo for the Delhi University.

He acts as Chairman or Secretary of many other cultural and academic institutions. He holds the rank of Major-General in the Indian Army. He is an author of many books, a poet and musician, and speaks fluently in English, Hindu, Urdu, Punjabi, and Dogri. He is married to Yasho Rajya Lakshmi, grand-daughter of the last Rana Prime Minister of Nepal, Maharajah Mohun Shumsher. They have three children, a married daughter, and two sons who are at college.

Well, you might ask. *What has this to do with amateur radio?*

Apart from the fact that Doctor Singh proved to be a most enjoyable, as well as charming and extremely intelligent travelling companion, he is a man with an excellent grasp of what the modern world is about. During our conversation, the subject of amateur radio came up and he certainly was easily able to grasp all that I told him as well as being obviously interested in what it was all about. After arrival in Los Angeles, I contacted my friend Jack W6ISQ, who was the President of the Northern Californian DX Foundation who readily agreed that I should approach Doctor Singh and through his good graces see whether there was a way in which some operation might be able to take place from Andaman and Nicobar Islands. Jack assured me that the NCDXF would be willing to help in any way in sponsoring any possible expedition.

This I have done, and now I have passed copies of the correspondence to our DX Editor, Ken VK3AH, so that he may be able to tell the story in his column. I have related the above material for general interest purposes. It is quite amazing just what interesting people you can meet whilst travelling, though. Doctor Singh did seem interested to the extent that he thought he might like to take out an amateur radio licence. I certainly hope he does and I for one would be thrilled to be able to speak to him again and see just how much he could enjoy the friendly world-wide brotherhood of our hobby. I might just add that I consider myself very fortunate as I was able to enjoy his company for almost two hours. The aircraft was detained from departure and, having boarded, I found myself seated next to him after having been speaking with him in the boarding lounge. So it certainly is an ill wind that blows no good. An experience which I would not wish to have missed. Doctor Karan Singh was travelling in the USA on a lecture tour during which he was speaking on the subject of Indian politics, in which he is of course he is extremely well-versed. Just before we parted I asked him what he would say if he had any message to give to people in Australia. His answer was *Remember, India is much closer to Australia than Europe.* He felt that our two countries did have a good relationship, however he also thought that we could do more to strengthen our relationships.

Surely our hobby of amateur radio can do much towards this end. I wonder now that you know about Doctor Karan Singh if you might learn more through asking your contacts in VU-land about him. Doctor Singh has visited Australia and told me that he found Australia very interesting and enjoyable. The historical information regarding him was taken from a small biographical pamphlet which he kindly gave to me before we parted company in Los Angeles.

So that finalises my notes for this month. I wonder also whether or not you did experience any forms of unusual or enhanced propagation caused by the passing of Halley's Comet while you were operating on any of the bands?

(I believe that it has been blamed for many other effects with the weather, both hot and cold, being no exception. I recently also heard that another reason for unusual weather conditions was the proliferation of all those computers!).

73 from Ian VK5QX

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27th ALL ASIAN DX CONTEST

The purpose of this contest is to enhance the activity of radio amateurs in Asia and to establish as many contacts as possible during the contest periods between Asian and non-Asian stations. It is supported by the Ministry of Posts and Telecommunication of Japan.

Contest Period:

Phone — 48 hours from 0000 UTC 21st June 1986 to 2400 UTC 22nd June 1986.

CW — 48 hours from 0000 UTC 23rd August 1986 to 2400 UTC 24th August 1986.

Bands: Amateur bands under 30 MHz.

Entry Classification:

1 Single operator, 1.9 MHz band (CW-only).

2 Single operator, 3.5 MHz band (including 3.8 MHz band, and so forth on).

3 Single operator, 7 MHz band.

4 Single operator, 14 MHz band.

5 Single operator, 21 MHz band.

6 Single operator, 28 MHz band.

7 Single operator, Multi-band.

8 Multi-operator, Multi-band.

Power, Type of Emission and Frequencies: Within the limits of own station licence.

Contest Call: Phone . . . CQ Asia. CW . . . CQ AA.

Exchange:

For OM stations — RS(T) report plus two figures denoting operator's age.

For YL stations — RS(T) report plus two figures 00

Restriction on the Contest:

No contact on cross-band.

For participants of single operator's entry — transmitting two signals or more at the same time, including cases of different bands is not permitted.

For participants of multi-operator's entry — transmitting two signals or more at the same time within the same band, except in case of different bands, is not permitted.

Point and Multiplier:

Contacts among Asian stations and among non-Asian stations will neither count as a point or a multiplier.

For non-Asian stations — a perfect contact with Asian stations (excluding US auxiliary military radio stations in the Far East, Japan) will be counted as follows for point scores: *1.9 MHz band . . . 3 points; 3.5 MHz band . . . 2 points; other bands . . . 1 point.*

Multipliers are the number of different **Asian Prefixes** worked on each band, according to the WPX Contest rules. Eg JS1ABC/7 will count for prefix JS7.

Scoring: The sum of the contact points on each band times the sum of the multipliers on each band.

Instructions on the Summary and Log Sheet

Summary sheet — write in your declaration and signature to give evidence of following the rules of the contest, together with your DXCC country, call sign, entry class, multiplier by band, point by band and total score.

Log sheets — use a separate sheet for each band and keep all times in UTC. Fill in the blanks of multiplier by countries or prefixes only the first time on each band.

Awards: Certificates will be awarded to the highest scorers in each category on each continent and medals will be awarded to highest scorer in the single operator multi-band and multi-operator multi-band sections.

Reporting: Submit a summary sheet and logs of only one classification to JARL, All Asia DX Contest, PO Box 377 Tokyo Central, Japan. Please indicate phone or CW on the envelope. Envelopes should be postmarked no later than 30th July for the phone-section and 30th September for CW.

Disqualification: Violation of the contest rules, false statements in the report or taking points from duplicate contact on the same band in excess of two percent by the total will be deemed reasons for disqualification.

Announcement of Results: Phone about February 1987 and CW about April 1987.

Countries List of Asia: A4, A5, A6, A7, A9, AP, BV, BY, EP, HL/HM, HS, HZ/7Z, JA-JS/7J, JD1 (Ogasawara Island), JT, JY, OD, S2, TA2-8, UA/UN/UV/UW, UZ9-0 (AsRSFSR), UD, UF, UG, UH, UI, UJ, UL, UM, VS6, VU, VU (Andaman & Nicobar Islands), VU (Laccadive Island), XU, XW, XX9, XZ, YA, YI, YK, ZC4, 1S (Spratly Island), 3W/XV, 4S, 4W, 4X/4Z, 5B4, 7O (S Yemen), 8Q, 9K, 9M2 (W Malaysia), 9N, 9V (Singapore), J2/A (Abu Ail)

1985 RESULTS

Last year VI6DU was awarded a medal from JARL as the continental leader in Oceania for the Multi-op, multi-band section.

Certificate winners in VK were: VK6AOK, VI2PS, VK2XT, VK2PFQ, VK2APK, and VI6DU.

Other VK participants in the contest were: VK2KPF, VK5NOD, VI2PWS, VK4NAS, VK2DLB, VK3DVT, VK2BPC.

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FIRST IARU HF CHAMPIONSHIP

The contest period is for 24 hours duration. Operating time for both single and multi-operator stations is 24 hours.

Operation may take place on 1.8-30 MHz. The 10, 18 and 24 MHz bands may *not* be used for contest QSOs.

IARU member society headquarters stations count as additional multipliers. These stations will be recognisable by the unique exchange they will transmit (see below).

For those not familiar with ITU zones around the world, a listing of countries and their corresponding ITU zone is included in this column. Proper forms, including a map are available from ARRL/IARU Secretariat, please send enough IRCs to cover return postage.

Eligibility: All licensed amateurs world-wide.

Objective: To contact as many other amateurs, especially IARU member society HQ stations, around the world as possible using 1.8 to 30 MHz, excluding the 10, 18, and 24 MHz bands.

Date: Second full weekend of July (12-13th July 1986).

Contest Period: 1200 UTC Saturday until 1200 UTC Sunday. Both single and multi-operator stations may operate for the entire 24 hour period.

Categories:

a Single operator — phone-only, CW-only and mixed mode. One person performs all operating and logging functions. Use of spotting nets is not permitted. All operators must observe the limits of their operators licenses at all times. Single-operator stations are allowed only one transmitted signal at any given time.

b Multi-operator — single transmitter, mixed mode only. Must remain on a band for at least 10 minutes at a time. Only one transmitted signal allowed at any given time. (Exception: *Only* IARU member society HQ stations may operate simultaneously on more than one band, with one transmitter on each band/mode. Only one HQ station call sign per member society per frequency band is permitted). All operators must observe the limits of their operators' licenses at all times.

Contest Exchange: IARU member society HQ stations send signal report and official IARU member society abbreviation. All others send signal report and ITU zone. A complete exchange must be logged for each valid QSO.

Valid Contact — The same station may be worked only once per band/mode. Mixed mode entries may work a station once per mode (but only in the generally accepted portions of that band for that mode. Note: Reworking a station in the phone portion of the band on CW is not permitted). Example: On any band, a station may be worked once on phone and once on CW (in the CW segment) for additional QSO credit. However, this counts as only one multiplier. Cross mode, cross band and repeater QSOs do not count. Where contest preferred segments are incorporated in regional band plans, participants are requested to observe them.

QSO Points:

a Contacts within your ITU zone, as well as QSOs with *all* IARU HQ member society stations, count as one point.

b Contacts within your continent (but different ITU zone) count three points.

c Contacts with a different continent count five points.

Multipliers: Total number of ITU zones plus IARU member society HQ stations worked on each frequency band. (Note: HQ stations do not count for zone multipliers).

Scoring: Multiplier times total number of QSO points.

Reporting:

a All entrants are encouraged to use the forms available from the ARRL/IARU Secretariat for return postage.

b Logs must indicate times in UTC, bands, modes, call signs, and complete exchange. Multipliers should be marked clearly in the log. Cross check sheets (dupe sheets) are required of more than 500 total QSOs are made.

c Entries *must* be postmarked within 30 days after the contest (13 August 1986). Any entry received after mid-October 1986 may not be received in time to be included in the printed results. Mail to 225 Main Street, Newington, CT 06111. USA.

Awards: A certificate will be awarded to the high-scoring CW-only, Phone-only mixed-mode and multi-operator entrant in each US State, ITU Zone and DXCC Country. In addition, achievement-level awards will be issued to those making at least 250 QSOs or having a multiplier total of 50 or more. Additional awards may be made at the discretion of each country's IARU member society.

Conditions of Entry: Each entrant agrees to be bound by the provisions of these rules, by the regulations of his/her licensing authority and by the decisions of the ARRL Awards Committee, acting for the IARU International Secretariat. Usual contest disqualification criteria apply.

PREFIX, CONTINENT and ITU ZONE

A2	AF	57	TI	NA	11
A3	OC	62	TJ	AF	47
A4	AS	39	TK	EU	28
A5	AS	41	TL	AF	47
A6	AS	39	TN	AF	52

A7	AS	39
A9	AS	39
AP	AS	41
BV	AS	44
BY	AS	33, 42, 43, 44
C2	OC	65
C3	EU	27
C5	AF	46
C6	NA	11
C9	AF	53
CE	SA	14, 16
CE0A	SA	63
CE0X	SA	14
CE0Z	SA	14
CM, CO	NA	11
CN	AF	37
CP	SA	12, 14
CT	EU	37
CT3	AF	36
CU2	EU	36
CX	SA	14
D2, 3	AF	52
D4	AF	46
D6	AF	53
DA-DP	EU	28
DU	OC	50
EA	EU	37
EA6	EU	37
EA8	AF	36
EA9	AF	37
EI	EU	27
EL	AF	46
EP	AS	40
ET	AF	48
F	EU	27
FT8W	AF	68
FT8X	AF	68
FT8Z	AF	68
FG	NA	11
FG, FS	NA	11
FH	AF	53
FK	OC	56
FM	NA	11
TR	AF	52
TT	AF	47
TU	AF	46
TY	AF	46
TZ	AF	46
UA1, 3, 4, 6		19, 20
	EU	29, 30
UA1 (FJL)	EU	75
UA - UZ2	EU	29
UA9 - UZ0		20, 26
	AS	30, 35, 75
UB	EU	29
UC	EU	29
UD	AS	29
UF	AS	29
UG	AS	29
UH	AS	30
UI	AS	30
UJ	AS	30
UL	AS	30
UM	AS	31
UO	EU	29
UP	EU	29
UQ	EU	29
UR	EU	29
V2-4	NA	11
V8	OC	54
VE, VY	NA	2, 3, 4, 9, 75
VK	OC	55, 58, 59
VK(LHI)	OC	60
VK9(W)	OC	60
VK9(X)	OC	54
VK9 (C, K)	OC	54
VK9(M)	OC	56
VK9(N)	OC	60
VK0(H)	AF	68
VK0(M)	OC	60
VP2	NA	11
VP5	NA	11
VP8(F)	SA	16
VP8	SA	73
VP9	NA	11
VQ9	AF	41
FO (Clip)	NA	10
FO	OC	63
FP	NA	09
FR	AF	53
FW	OC	62
FY	SA	12
G-GW	EU	27
H4	OC	51
HA, HG	EU	28
HB	EU	28
HC	SA	12
HH	NA	11
HI	NA	11
HK	SA	12
HK0(M)	NA	12
HK0	NA	11
HL, HM	AS	44
HP	NA	11
HR	NA	11
HS	AS	49
HV	EU	28
HZ, 7Z	AS	39
I, IS0	EU	28
J2	AF	48
J3	NA	11
J5	AF	46
J6-8	NA	11
JA	AS	45
JD, AS	OC	45
JT	AS	32, 33
JW	EU	18
JX	EU	18
JY	AS	39
W, K	NA	6, 7, 8
KC6	OC	64, 65
KG4	NA	11
KH1	OC	61, 62
KH2	OC	64
KH3-7	OC	61
KH8	OC	62
KH9	OC	65
KH0	OC	64
KL7	NA	1, 2
KP1-5	NA	11
VR6	OC	63
VS	AS	44
VU	AS	41
VU7	AS	41, 49
XE	NA	10
XE4	NA	10
XT	AF	46
XU	AS	49
XW	AS	49
XX9, CR9	AS	44
XZ	AS	49
Y2-9	EU	28
YA	AS	40
YB	OC	51, 54
YI	AS	39
YJ	OC	56
YK	AS	39
YN, HT	NA	11
YO	EU	28
YS	NA	11
YU	EU	28
YV	SA	11
YV0	NA	11
Z2	AF	53
ZA	EU	28
ZB	EU	37
ZC4	AS	39
ZD7-9	AF	66
ZF	NA	11
ZK1-3	OC	62
ZL	OC	60
ZP	SA	14
ZS	AF	57
1A0	EU	28
1S	AS	50
3A	EU	27
3B6-9	AF	53
3C	AF	47
3C0	AF	52
3D2	OC	56
3D6	AF	57
3V	AF	37
3W	AS	49
3X	AF	46
3Y	AF	67
KX6	OC	65
LA	EU	18
LU	SA	14, 16
LX	EU	27
LZ	EU	28
OA	SA	12
OD	AS	39
OE	EU	28
OF-OH	EU	18
OK	EU	28
ON	EU	27
OX, XP	NA	5, 75
OY	EU	18
OZ	EU	18
P2	OC	51
PA	EU	27
PJ2, 3, 4, 9	SA	11
PJ5, 6, 7, 8	NA	11
PY	SA	12, 13, 15
PY0	SA	13
PY0(T)	SA	15
PZ	SA	12
S2	AS	41
S7	AF	53
S9	AF	47
SJ-SM	EU	18
SP	EU	28
ST	AF	48
SU	AF	38
SV	EU	28
T2	OC	65
T30	OC	65
T31	OC	62
T32	OC	61, 63
T5	AF	48
T7	EU	28
TA, EU	AS	39
TF	EU	17
TG	NA	11
4S	AS	41
4U(ITU)	EU	28
4U(UN)	NA	08
4W	AS	39
4X	AS	39
5A	AF	38
5B	AS	39
5H	AF	53
5N	AF	46
5R	AF	53
5T	AF	46
5U	AF	46
5V	AF	46
5W	OC	62
5X	AF	48
5Z	AF	48
6W	AF	46
6Y	NA	11
7O	AS	39
7P	AF	57
7Q	AF	53
7X	AF	37
8P	NA	11
8Q	AS	41
	AF	
8R	SA	12
9G	AF	46
9H	EU	28
9J	AF	53
9K	AS	39
9L	AF	46
9M2	AS	54
9M6, 8	OC	54
9N	AS	42
9Q	AF	52
9U	AF	54
9V	AS	54
9X	AF	52
9Y	SA	11
J2, A	AS	39

MEMBERSHIP

Gilbert Griffith VK3CGG
7 Church Street, Bright, Vic. 3741

I am not a writer, I am not even much of a talker. You may find me on the local repeater once a month and that is when I want to ask another amateur something. I haven't even plugged the microphone into my HF rig for six months!

I thought of writing an article about my different antennas, but if you saw the trouble I had with them you wouldn't want to know about it. I may have enough technical knowledge after 250 or so hours of study to pass the AOCP, but it took twice that long to get a good set of antennas flying. Just like 90 percent of you, right?

So now what do I do? Sit back and look forward to a long-life enjoying amateur radio and nothing else? Or apply myself and see what I can really put into it aside from the annual fees?

I have already put in a lot of effort with a couple of contests and have some awards under my belt. I found that the harder it was, the better I felt. The WIA 75 Award really looks good in a frame on the shack wall and it is a great thrill to scan the latest Amateur Radio to find out how you went in the last contest. A bit like how you felt when you completed your first CW QSO on air.

Consider what it costs to spend an hour or two a week in that little extra effort. You may have to miss out on talking to your mates about the latest happenings in your favourite TV soapy or to see the antics of the current TV hero . . . but you will probably learn a lot about a bunch of people you never knew before, new members.

Let us start by listing a few of the advantages of amateur radio. If you agree and want to do your own personal bit, then write them down and carry them with you, use them in conversations with your friends and tell them to your local newspaper editor. You can possibly think of many more, so write and tell me so we can share them.

Amateur radio is a way to sit down and talk to people, people from America, Japan, the Philippines, China or anywhere, without leaving the comfort or security of your own home. You can talk to an old-timer who may tell you about his experiences lugging a radio through war-torn enemy territory, or you may speak to a teenager worried about their HSC examinations, or where to find his next girlfriend. You can have friendly arguments and you can help to save lives in emergencies. There is no limit.

People will ask you about how to become an amateur. Don't just say *do the exams,* tell them how to go about getting started, have addresses handy so they can write for more information, tell them how hard it really is . . . and how worthwhile. Nothing will make it easy to get a full call licence, but with novice and limited levels it can be gradual. But everyone has to knuckle under and study, so let us convince them that it is time well spent.

My favourite dislike is the television (not to mention videos) so I often suggest that what you miss on the *box* won't really hurt you. The quiz shows won't do you any good unless you are on them and taking home the money — and just imagine the amount of study the big winners must do. And you won't remember the Sunday Movie for long, but I would wager that you can remember your first DX contact, or maybe that opening to Finland on 15 metres, last week.

You can show youngsters the advantages of a hobby that can gain them good employment. I noticed in the March Amateur Radio that the Antarctic Division is looking for communications officers, cooks and carpenters. There are jobs on ships, weather stations on the islands, and countless other openings. The Antarctic Division of the Commonwealth Government is located at Kingston, Tasmania, (phone (002) 29 0209) — I looked the number up in the phone book.

Here a few suggestions for things I will be doing myself — not next year but this week.

Write or phone the WIA in your state and ask for a few copies of the pamphlet Amateur Radio, A Hobby for Everyone, *and give them to your friends, people you meet, or, if you are like me and hardly speak to your next-door neighbour, leave a few at the local newsagent, hotel, milk bar or library instead.*

Don't throw away those old AR magazines, give them to the local high school or library.

If someone is boring you to death talking about the TV soapies tell them about the rare station you spoke to at the South Pole where it was blowing a gale and was 80 degrees below zero outside.

They might even remember . . . do you?

NOTE: Gil has been a member of the WIA for 12 months, after attaining his licence in November 1984. He has been pondering on ways to encourage new members to the amateur radio fraternity and decided that maybe a regular column in AR exchanging ideas of recruiting new members, and providing general motivation may be a worthwhile experiment. What do other members think? Write to Gil with your thoughts.

From QST — December 1985

Awards

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton. SA. 5014

AWARDS ISSUED RECENTLY

Worked All VK Call Areas (HF)

1448	David R Ellis ZL1BZL
1449	Jim Priest ZL2FS
1450	L R Baber VK2RJ
1451	Lorenz M Perry WA7CQE/DV2
1452	Keith J M Reid ZS6BRD
1453	Giorgio Baldassari IK5ACO
1454	Vilo Kuspal OK3MB
1455	Ryuji Nakayama JA0WRF

DXCC New Members

CW
126 Sam Galea VK2AKP

Phone
343 L R Baber VK2RJ

Open
233 John Meagher VK2AMV

Worked All VK Call Areas (VHF)

166	Geoff Wilson VK3AMK (2m)
167	Ronald J Watkins VK3XOA (6m)
168	Andrew Martin VK3KAQ (2m)

Apology for omission from DXCC ladder in April AR.

Open
292/22 Syd Molen VK2SG

CONGRATULATIONS

Ross Usher VK2ZRU, for being the first Australian to receive the WAC Award from the ITU with satellite endorsement.

BRISBANE AMATEUR RADIO CLUB AWARD

Requirement is to contact seven club members, or four club members plus the club station (VK4BA or VK4WK).

Club nets are held on Monday evenings, 28.445 MHz at 0930 UTC and Wednesday evenings on 146.550 MHz, at the same time.

To claim the Award send a log extract and $1 to the Awards Manager, BARC Inc, PO Box 300, Darra, Qld. 4076.

Thanks to Bob Semple VK4CE, for this information.

LAWRENCE HARGRAVES AWARD

Illawarra Amateur Radio Society sponsor this award for radio amateurs.

Requirements are to have one contact with the club station VK2AMW, which will be activated on 28th and 29th June 1986. All HF bands, two metres, 70 cm and 23 cm EME are included in the planned weekend, working from the club's EME site, just west of Wollongong, on the Illawarra escarpment.

Send $2 or four IRCs to the Award Manager IARS, PO Box 1838, Wollongong, NSW. 2500, quoting the following details:
Date, Time, Frequency, Mode, operator.

Thanks to Tony Mowbray VK2KAJ, the Club's Broadcast Officer, for supplying this information.

DIPLOMA FRACAP

The award is sponsored by the Radio Amateurs of Central America and Panama.

Two-way confirmed contact is required on any band, any mode, with each of the six member countries.

The countries are — Guatemala; El Salvador; Honduras; Nicaragua; Costa Rica and Panama.

Only contacts after 16th August 1985 are valid for this award and only contacts with amateurs affiliated to a radio club, member of FRACAP, are valid.

QSLs or a GCR list, certified by the radio club of which the applicant is a member should be sent, together with 10 IRCs or US$5 to the Awards Manager of Radio Club de Costa Rica, Bengt Hallden TI4BGA, Box 999, 3000 Heredia, Costa Rica.

Thanks to John Gough VK5QD, for this information.

JUBILEE INDUSTRY TRADE TRAIN SPECIAL AWARD

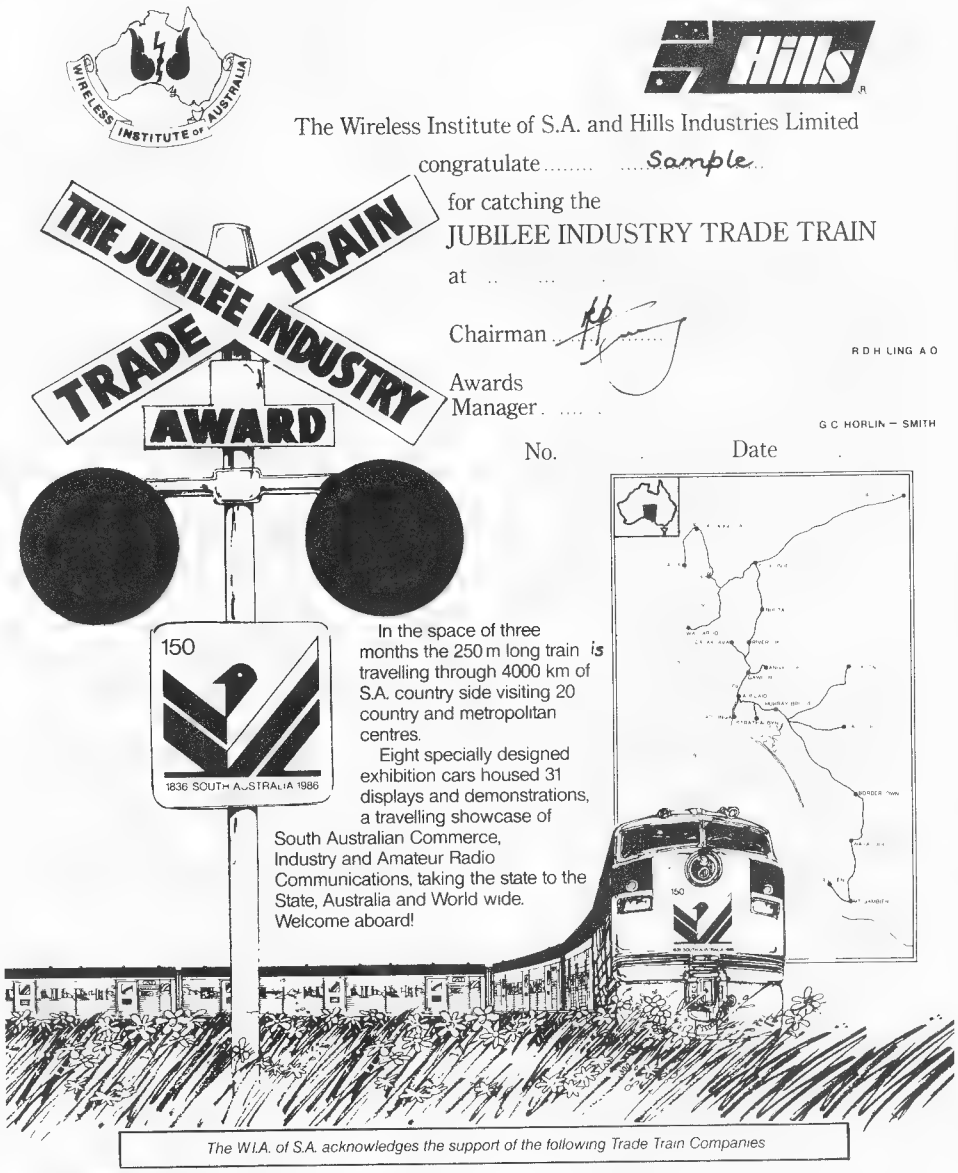
This is available for one contact with amateurs on the Trade Train.

A five-colour artists impression of the Jubilee 150 Trade Train en route through the SA countryside, with the award details on the map of South Australia together with the locations or whistle stops from which the stationary amateur station can be worked for the award and Jubilee 150 points make up this attractive award.

Signatory of the award is Mr Bob Ling, Chairman of the Jubilee 150 Executive Committee and Managing Director of Hills Industries SA.

The award includes a documentary of the train's historic journey. The story will appear with written acknowledgment on the presentation of the award.

The award is offered to one contact QSL cards to *Trade Train Award, WIA (SA), PO Box 1234, Adelaide, SA 5001. (Cost $2 or four IRCs for packaging and postage) or direct to Graham*



The W.I.A. of S.A. acknowledges the support of the following Trade Train Companies

Horlin-Smith VK5AQZ, 2 Athol Avenue, Tranmere, SA. 5073.

CAPE WILLOUGHBY LIGHTHOUSE, KANGAROO ISLAND, JUBILEE 150 AWARD

Applications for this attractive award should include a one contact QSL card to *Kangaroo Island Award, Graham Horlin-Smith VK5AQZ,* (address as above). Include $2 or four IRCs for postage and handling.

One contact with the Jubilee 150 DXpedition to Cape Willoughby Lighthouse, Kangaroo Island, qualifies for this award.

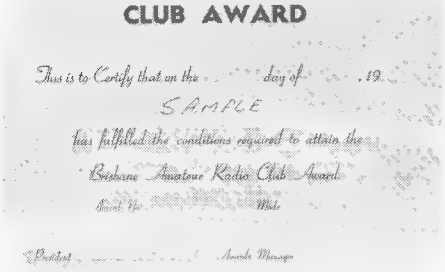
The award is signed by the Mr Neville Cordes, Mayor of Kingscote, Kangaroo Island.

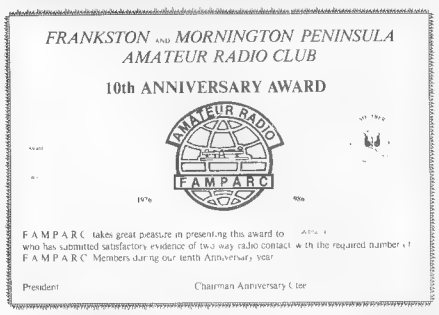
The award is four colours, designed overlay of the Cape Willoughby Lighthouse featuring a wealth of tourist attractions on Kangaroo Island including a short history of the Island's beginning as South Australia's first colony.

WIA 75 AWARD RICIPIENTS

588	John Ferrington VK2VOX
628	Jeanne Gilchrist ZL2BOD
629	Henri Vandevelde ON4VN
630	Gerhard Schumacher DJ7PB
631	R Chakravarthy VU2TTC
632	Tom Ellis ZL3KN
633	Anne Griffiths ZL2BOV
634	Don McDonald VK5ADD
635	Mario Ambrosi I2MQP
636	Egbert Heretsen ONL4003
637	Kurt Brauer HB9AMZ/SWL
638	T Thornton VK2PJT
639	Pentti Lareva OH3TY
640	Wally Rueger KC9WQ
641	Anton Iriawan YB5QZ
642	Dieter Albrecht DL2KBH
643	Klaus-Peter Weinborner DK8DB
644	William Tanujaya YC0DNK
645	Ross W Forbes WB6GFJ
646	Charles K "Rusty" Epps W6OAT
647	Shinji Maeda JG6PCA
648	Hiroshi Harada JE4OJD
649	Edurad H Pandoe YC2AFP
650	Denis Kleen SM6OOI
651	Jukka Kovanen OH6-145 SWL
652	A Katarzynski VK4JXZ
653	Peter Dann VK3CPD
654	Lee Ping Kee VS6TQ
655	Margaret Schwerin VK4AOE
656	Tom Weston KB7MJ
657	Soebijakto Adinegoro YC0BCA
658	T K Morrison VK3DVZ

BRISBANE AMATEUR RADIO CLUB AWARD


This is to Certify that on the day of 19
SAMPLE
has fulfilled the conditions required to attain the
Brisbane Amateur Radio Club Award
President Awards Manager


FRANKSTON AND MORNINGTON PENINSULA AMATEUR RADIO CLUB
10th ANNIVERSARY AWARD
AMATEUR RADIO
FAMPARC
FAMPARC takes great pleasure in presenting this award to
who has submitted satisfactory evidence of two way radio contact with the required number of FAMPARC Members during our tenth Anniversary year
President
Chairman Anniversary Ctee

To obtain the FAMPARC Award see rules, page 43, May AR.

NEED A POWER SUPPLY

Recently Don VK2TMP, was looking for (and still is) a power supply, and happened to mention the fact to a colleague. Said colleague, with a sly grin, handed Don an article and said it may be of interest to him. Following are excerpts describing the *power supply? ? ?.*

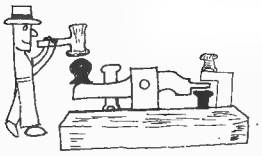
The Itaipu hydro-electric project in SW Brazil is the largest installation of its type in the world and everything about it is gargantuan, including the transmission system which transmits 12 600 MW from the interior to the industrialised coast. The EHV voltage lines — 345, 500 and 750 kV, plus HVDC into a single package.

The project straddles the Parana River and will have 18 700 MW turbine/generators. These are the largest generator sets ever built and will have a total capacity, when running, of six times that of the Aswan High Dam Project on the River Nile, Egypt.

Thyristor valves, the largest of their kind, are housed in clean-air, pressurised valve halls, which are basically immense Faraday cages, to prevent interference with telephone and control circuits from the intensives fields generated within the building. The thyristors are rated at 3 000 amps and require water-cooling. A water-treatment plant with a capacity of 1 804 cu metres per day supplies pure water in the amount of 1 116 cu metres a day for the valves. The water is demineralised and deoxygenated before use. Each valve has 96 series connected thyristors which are controlled via a fibre-optic triggering system.

Don states fascination, rather than interest was a more apt description of his feelings. "Just imagine thyristors rated at 3000 amps, requiring a water treatment plant to supply their cooling water, a massive 12600 MW and voltages of 345, 500 750 kV and ± 600 kV DC — some power supply!"

Contributed by Don Palmer VK2TMP from The Shire & Municipal Record, June 1985.



Pounding Brass

Marshall Emm VK5FN
Box 389, Adelaide, SA. 5001

CW FOREVER!

Following on the coincidences from last months column — I received a poem from Hans VK5YX, and was to use it in this months column, however, as coincidences would have it, the poem appeared in April AR, page 47. Hans received the poem by a very circuitous route from the Tucson IBM Amateur Radio Club in the USA.

(Please read the poem before continuing.)

From a literary point-of-view it is only doggerel at best, but there are many who share the sentiments.

I number myself among those who regard CW as something more than a technique, something approaching an art form. Evidently it has now been elevated to a religion! I like the image of a Silent Key pulling that final lever. I guess there is a limited supply of words that rhyme with forever.

If I can stray slightly off the subject of CW for a moment, I was intrigued that the poem found its way here via a computer user group. The last version of my word-processing software incorporated a very good spelling checker. The current version has an improved speller *and a thesaurus!* I wonder if the state of the art in the USA includes a rhyming dictionary. . .

Brass pounders prefer CW to phone for any number of reasons, but there is always the knowledge that when it comes to the crunch, this antique mode is superior to phone. It may be that it doesn't have to *come to the crunch.* There are situations where CW can be superior even when conditions for phone are perfect.

Recent correspondence with Lindsay VK3ANJ, challenges phone operators. With a son in the Country Fire Authority, Lindsay is convinced that WICEN voice traffic nets are inefficient in comparison with CW nets. Having monitored a lot of the emergency WICEN traffic during the Ash Wednesday Disaster, I am inclined to agree. Given the amount of phonetic spelling and repetition required to pass a simple message on two metres, I suspect a pair of competent brass pounders would leave the *mike-bashers* for dead. Especially if the phone-ops included some of the operators I have heard who take the trouble to phonetically spell the word *TANGO HOTEL ECHO!*

Lindsay proposes a shootout. He has come up with a proposal for a contest between teams of phone operators and teams of CW operators to resolve the issue once and for all. Each team would consist of eight operators, one from each call area, and the contest would involve relaying a message from VK3 to VK1, via VK7, 5, 6, 8, 4 in that order. Winners would be judged on accuracy of text and time of receipt in Canberra.

The idea has a lot of merit, but I see some problems with the proposed format — for example, waiting team-members could sandbag earlier transmissions several times (which, of course, would tend to favour the CW operators). And who would you get to judge the results?

Maybe the judging wouldn't be too much of a problem if you got a non-amateur, non-technical person with some interest in communications to do it — like perhaps the Minister for Defence. And the sandbagging possibilities could be overcome by making it a point to point exchange, with a CW and phone operator in close proximity at each end.

What do you think? Please let me know, and if there is enough interest I will see if I can get the WIA to organise it.

While we are on the subject of contests, it appears to me that, given the size of the amateur population in Australia, the two contests of most interest to CW operators, the RD and the John Moyle, present certain disadvantages. The RD demands an entire weekend, which limits the scope of a CW-only operator. The JM offers a six-hour section, but demands the effort of setting up a portable station for the sake of those six hours (or you can use the home station and try to work three times as many stations).

Both of the cited contests have to cater for a lot of people with varying interests — so they become quite complex in terms of rules.

I propose a CW Sprint. An all out three-hour CW contest on 80 metres on a Saturday night. Again, if you like the idea (or object to it) drop me a line.

Finally, in case any phone operators have taken offence to anything in this column I had better say that I am not a CW crank; any apparently disparaging comments were intended only to promote competition. To prove it, I will gladly enter an HF phone sprint if someone would like to organise it.

73 till next month.

AR

RADIOTELEGRAMS

STATION	CALL SIGN	FREQ kHz	HOURS UTC	REMARKS
ADELAIDERADIO	VIA	*500*	Continuous	Watch calls and replies
		472	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4272.5	Hx	As required
		6463.5	Hx	As required
BRISBANERADIO	VIB	*500*	Continuous	Watch, calls and replies
		435	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4230.5	Hx	As required
		6351.5	Hx	As required
BROOMERADIO	VIO	*500*	Continuous	Watch, calls and replies
		440	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4323.6	Hx	As required
		6407.5	Continuous	Guards 6 MHz (Ch 5-6), 8 MHz (Ch5-6)
CARNARVONRADIO	VIC	*500*	2300-1200	Watch, calls and replies
		476	2300-1200	Primary working frequency
		512	2300-1200	Supplementary calling frequency
		4323	Hx	As required
		6407.5	2300-1200	Guards 6 MHz (Ch 5-6)
DARWINRADIO	VID	*500*	Continuous	Watch, calls and replies
		445	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4272.5	Hx	As required
		6463.5	Hx	As required
		8487	Continuous	Guards 8 MHz (Ch 5-6)
ESPERANCERADIO	VIE	*500*	2300-1200	Watch, calls and replies
		435	2300-1200	Primary working frequency
		512	2300-1200	Supplementary calling frequency
		4323.6	Hx	As required
		6407.5	Hx	As required
MELBOURNERADIO	VIM	*500*	Continuous	Watch, calls and replies
		430	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4228.5	Hx	As required
		6333.5	Hx	As required
PERTHRADIO	VIP	*500*	Continuous	Watch, calls and replies
		484	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
	VIP7	*4229*	Hx	Ch 5-6 and 16
	VIP2*	*6407.5*	Hx	No watch kept
	VIP3	*8597*	Continuous	Guards 8 MHz (Ch 5-6 and 16)
	VIP4	*12994*	Continuous	Guards 12 MHz (Ch 5-6 and 16)
	VIP5	*16947.6*	0600-1000	Guards 16 MHz (Ch 5-6 and 16) Daily
	VIP5	*16947.6*		Guards 16 MHz (Ch 5-6 and 16) Daily
	VIP6	*22315.5*	On request	Guards 22 MHz (Ch 3-4 and 10)
* *Presently not in use.*				
ROCKHAMPTONRADIO	VIR	*500*	2200-0730	Distress, emergency auto alarm receiver watch only
		4255.6	2200-0730	Guards 4 MHz (Ch 5-6 and 16)
		6333.5	Hx	As required
SYDNEYRADIO	VIS	*500*	Continuous	Watch, calls and replies
		476	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		440	Continuous	Secondary working frequency
	VIS53	*4245*	1300-2100	Guards 4 MHz (Ch 5-6 and 17)
	VIS3	*6464*	0800-2200	Guards 6 MHz (Ch 5-6 and 17)
	VIS35* *	*8352*	Hx	As required
	VIS26	*8521*	Continuous	Guards 8 MHz (Ch 5-6 and 17)

	VIS5	*12952.5*	Continuous	Guards 12 MHz (Ch 5-6 and 17)
	VIS49* *	*12979.5*	Hx	As required
	VIS6	*17161.3*	2100-1300	Guards 16 MHz (Ch 5-6 and 17)
	VIS62* *	*17138.4*	2100-1300	As required
	VIS42	*22474*	2200-0800	Guards 22 MHz (Ch 3-4 and 9)
	VIS43* *	*22495*	2200-0800	As required
** * Secondary frequencies*				
THURSDAY IS.RADIO	VII	*500*	Continuous	Watching, calls and replies
		488.5	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4228.5	Hx	As required
		6333.5	Continuous	Guards 8 MHz (Ch 5-6)
TOWNSVILLE-RADIO	VIT	*500*	Continuous	Watch, calls and replies
		420.5	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4255.6	Hx	As required
		6463.5	Continuous	Guards 8 MHz (Ch 5-6)

TRAFFIC LISTS

STATION	CALL SIGN	FREQ kHz	HOURS UTC
ADELAIDERADIO	VIA	472 6463.5 (Day) 472 4272.5 (Night)	**0018; 0440; 0840; 1018; 1240** **1640; 2040**
BRISBANERADIO	VIB	435 6351.5 (Day) 435 4230.5 (Night)	**0010; 0410; 0810; 0948; 1210** **1610; 2010; 2318**
CARNARVONRADIO	VIC	476 6407.5 (Day) 476 4323 (Night)	**0005; 0200; 0348; 0605; 0805** **1130**
DARWINRADIO	VID	445 8487 (Day) 445 4272.5 (Night)	**0048; 0448; 0848; 1048; 1248** **1648; 2048**
ESPERANCERADIO	VIE	435 Only	**0010; 0048; 0210; 0610; 1010; 1118**
THURSDAY ISLANDRADIO	VII	488.5 6333.5 (Day) 488.5 4228.5 (Night)	**0018; 0418; 0818; 0918; 1218** **1618; 2018**
MELBOURNERADIO	VIM	430 6333.5 (Day) 430 4228.5 (Night)	**0300; 0700; 0900; 0948; 1100** **1500; 1900; 2300; 2318**
BROOMERADIO	VIO	440 6407.5 (Day) 440 4323.6 (Night)	**0010; 0118; 0410; 0810; 1230** **1610; 2010**
PERTHRADIO	VIP	484/HF	**0100; 1200 and at each even hour plus 20 minutes**
ROCKHAMPTONRADI-O	VIR	4255.6 (HF only)	**0048; 0218; 0418; 0618; 2218**
SYDNEYRADIO	VIS	476/HF	**0918; 2248 and at each even hour plus 50 minutes on MF and "primary" HF frequencies and at each odd hour plus 50 minutes on "secondary" HF frequencies between 2350 and 0950 inclusive**
TOWNSVILLERADIO	VIT	420.5 6463.5 (Day) 420.5 4255.6 (Night)	**0230; 0630; 0930; 1030; 1430** **1830; 2230; 2348**

DISTRESS, SAFETY & WEATHER SERVICES

STATION	CALL SIGN	FREQUENCY	HOURS UTC
ADELAIDERADIO	VIA	472 4272.5+ 6463.5	**0018, 1018**
BRISBANERADIO	VIB	435 4230.5+ 6351.5	**2318, 0948**
BROOMERADIO	VIO	440 4323.6+ 6407.5	**0118, 1230**
CARNARVONRADIO	VIC	476 4323+ 6407.5	**0200, 1130**
DARWINRADIO	VID	445 4272.5+ 8487	**0048,1048**
ESPERANCERADIO	VIE	435 4323.6+ 6407.5	**0048, 1118**
MELBOURNERADIO	VIM	430 4228.5+ 6333.5	**2318, 0948**
PERTHRADIO	VIP	484* 4229 8597 12994	**0100, 1200***
ROCKHAMPTONRADI-O	VIR	4255.6+ 6333.5	**0048**
SYDNEYRADIO	VIS	440 8452	**2248, 0918**
LONGRANGE (OCEAN & HIGHSEAS) BROADCASTS SYDNEYRADIO	VIS	4286 6428.5 8478 12907.5 16918.8 22485	**0100, 0500, 0900** **1300, 1700, 2100** **Long Range Navy Warnings Only**
	VIX*	4286 6428.5 8478 12907.5 16918.8 22485	**0130, 0530, 0930** **1330, 1730, 2130** **Ocean & Highseas Weather Forcasts**
***Transmited by RAN Canberra**			
THURSDAY ISLANDRADIO	VII	488.5 4228.5+ 6333.5	**0018, 0918** **(NX — Gale/Storm Warnings only)**
TOWNSVILLERADIO	VIT	420.5 4255.6+ 6463.5	**0930, 2348**
+ Indicates "Night time" transmit frequency			

QSP

1926 TRANS PACIFIC TESTS

Between 23rd May and 5th June 1926, the WIA asked Australian amateurs to take part in tests with America to determine:

— to discover the most reliable and effective amateur station in each of the Australian and American States
— to establish definitely the hours during which reliable amateur communication can be maintained across the Pacific
— to stimulate interest in observations on waves as low as five metres
— to discover the Australian amateur station that can correspond with an American amateur station on three separate nights of the test period with the minimum total input power.

The tests were being organised by the then Honorary Federal Secretary, Ross A Hull.

The WIA's Federal Executive Council in 1925/26 had its Headquarters in the Royal Society's Building, 5 Elizabeth Street, Sydney. Telephone B 2235. Postal address was Box 3120P, GPO Sydney. President was Phil Renshaw, and Honorary Treasurer H A Stowe.

The WIA letter-head of the day included the following: *The Institute is established for the purpose of encouraging the scientific study of wireless telegraphy and telephony in Australia, and to promote the intercourse of those interested in the subject and to aid them with advice and instruction.*

There will be further articles on the 1926 Tests in a later edition. Are there any amateurs or SWLs who took part in those tests or have information they could pass on? If so, please advise the Federal Office.

Contributed by Tim Mills VK2ZTM, based on information supplied from the files of the Waverley Amateur Radio Club, VK2BV by Duane VK2VE. (See page 64, November 1985 Amateur Radio).

Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

ALARA Get-Together 1985, at *Glen Osmond* Woodend Vic. Standing from left: Janet VK3BTU, Bron VK3DYF, Warren VK3BYD, Muriel May and daughter Charlene. Front: Bonnie VK3PBL, Marjorie VK3HQ, Valda VK3DVT, Joan VK3NLO, Margaret VK3DML, and Mavis VI3KS.

Hello again! How quickly the months go by, and ALARA is nearly 11 years old.

As part of our celebrations this year, we are pleased to announce a special ALARA Birthday YL Activity Day on Saturday, 26th July from 0400-1200 UTC. Phone only, all bands. (Frequencies as for the ALARA Contest). YLs to contact YLs.

Sorry fellas! YLs only this time, but the ALARA Contest is coming shortly, and we will be very pleased to hear from you then.

WIA 75th ANNIVERSARY MEDALLIONS

The following ALARA members have been awarded WIA 75th Anniversary Medallions.

Marilyn Syme VK3DMS — Zone and Club Net Controller, VK3 Division.
Austine Henry VK3YL — Assistance to WIA, particularly VK3 Division.
Margaret Schwerin VK4AOE — VK4 ALARA Representative. Assistance to Dalby Amateur Radio Club and the only YL member.
Jenny Warrington VK5ANW — VK5 Division Secretary, Vice-President and Columnist.
Marlene Austin VK5QO — Written history of VK5 Division 1919-1980.
Joy Charles VK5YJ — WICEN Roster Co-ordinator. Yachting Trails Co-ordinator.
Christine Bastin VK6ZLZ — Divisional Councillor.
Gil Weaver VK6YL — Divisional Councillor.
Daphne Hugo — On behalf of the Ladies Luncheon Group.

Congratulations ladies, on a very fine achievement.

ALARA AWARD

Recipients of the ALARA Award from January to March 1986 are as follows.

No/Date 1986	Name Call Sign/Stickers
115/22.1	**Mervyn Vinicombe VK1MV**
116/21.2	**Maree Smirow VK2NKN**
117/21.2	**Jeanne Gilchrist ZL2BOD/4**
118/19.3	**Mary McDonald WB5LBR**

NEWSLETTER

Our long-time Editor of the ALARA Newsletter, Marlene VK5QO, is *retiring* from the position after five years. During that time the Newsletter has grown, both in content and standard of material, a tribute to Marlene's journalistic capabilities. We owe her a very big vote of thanks for all the time and effort she has put into making it such an enjoyable and readable publication. (Cases exist of ALARA members not being able to read their Newsletter when it arrived because the OM had got to it first, and they had to wait until he had finished reading it!).

The new Editor, from July, will be Bron VK3DYF, and any items for the Newsletter should be sent to her: Bron Brown, 99 Foam Street, Rosebud, Vic. 3939. Our best wished to you Bron. I am sure you will do an excellent job.

ZL2 YL GET-TOGETHER

What a fabulous day. The sun shone, the birds sang and the wind did not blow. We gathered together in friendship at Sylvia's place (ZL2LS), Napier on 22nd February 1986.

The day took on the form of a garden party. We sat under the magnificent trees in Sylvia's garden, out of the hot sun, and chattered and reminisced, caught up with old friends, made new ones, put faces to the voices we often work on the air, and really enjoyed ourselves.

We had each brought a plate of food which we shared, a Pot Luck Lunch. This we had outside in the shade so we ate and enjoyed the view of the gardens.

Back from Left: Pearl ZL2QY, Biny ZL2AZY, Jos ZL2BAO, Aola ZL1ALE. Front: Marilyn ZL2BOA, Jeanne ZL2BOD and Cathy ZL2AOK.

After lunch we had a photographic session of the WARO members and groups of the girls who belonged to overseas YL amateur radio organisations. The OMs were included in the day and had their photographs taken, too.

Shortly after 3pm, various ones who had to get-away reluctantly said their good-byes and expressed their hopes for meeting again in the near future. It really was a truly fabulous day.

Thanks to Marilyn ZL2BOA for this information.

ODDS-N-ENDS

Congratulations to the ALARA members who assisted with the amateur radio segment of the *Airwaves* program, broadcast on ABC, earlier in the year, notably Helene VK7HD and Marilyn VK3DMS. Congratulations to Marilyn also on being the first VK member of the Belgian Young Ladies' Club.

Denise VK5YL, would like to sponsor someone, anywhere, who would be interested in contacts on CW. There must be some CW enthusiast among the YLs out there somewhere who would like to be sponsored into ALARA.

I have been informed by an ALARA member, that the meaning of *33* given in this column in March, was not correct. She gives the original meaning as *Love sealed with friendship between one YL and another.* The version printed, apparently, came later. My apologies for getting it wrong!

CORRECTIONS TO YL ACTIVITIES LIST (APRIL AR)

The VE/VK/ZL YL Net on 14.160 MHz, Fridays at 0500 UTC is a *phone* not a CW net.

The Monday YL-DX Net on 14.220 MHz now starts at 0600 UTC, not 0630.

THE 220 YL NET

This net is still run most competently by Barry VK7GE. (Think I'll resort to a little versifying!).

Every Monday at 0600
We wait on frequency;
Listening for the familiar tones
Of VK7GE.

Our Barry calls us each in turn,
And keeps us all in order,
And handles most effectively
The odd OM disorder.

YLs all around the world
Are waiting patiently.
He's got more ladies in his book
Than the Sheik of Arab-ee!

He has a cheerful chat with each.
We never hear him flustered;
He does not raise his voice or shout
Where others may have blustered.

He smoothes the way for rare DX
And gives us all a try;
Hears the faintest YL voices,
Never lets one pass him by.

There are girls from England, Belgium, France,
Sweden and Italy,

New Zealand, USA, Brazil,
Zimbabwe and Fiji.

From many places round the globe
We hear the cheerful greetings,
And catch up with our friends again
In pleasant on-air meetings.

So thank you, Barry, from us all
For such a friendly net.
Hope to meet you on a Monday night
For many a long year yet.

Until next month, 33/73, Joy VK2EBX. ar

Radio Amateur Old Timers Club

John Tutton VK3ZC
11 Cooloongatta Road, Camberwell, Vic.

Following are the results of the March QSO Party held on 20 metres.

Call	Mode	QSOs	Area	Total
VK4RF	CW/SSB	38	10	1900
VK6HC	SSB	31	9	1395
VK3JA	CW/SSB	26	9	1170
VK5SJ	SSB	29	7	1015
VK3KS	CW/SSB	23	8	920
VK3XB	CW/SSB	23	8	920
VK3LC	CW/SSB	22	8	880
VK2PU	CW/SSB	24	7	840
VK7RF	SSB	21	8	840
VK2AWA	SSB	18	8	720
VK4OX	SSB	23	6	690
VK7CH	CW	16	7	560
VK3XF	CW/SSB	16	6	480
VK4AEM	SSB	14	6	420
VK7RY	CW/SSB	13	6	390
VK5RK	SSB	15	5	375
VK4BG	SSB	12	6	360
VK5KV	SSB	12	5	300
VK7BJ	SSB	12	5	300
VK3YW	CW	5	4	100
VK3NA	SSB	3	1	15
ZL2KM	CW/SSB	25	9	1125
ZL2RP	SSB	24	7	840
ZL3BJ	CW/SSB	21	8	840
ZL2AB	CW/SSB	19	7	665
ZL2AT	SSB	15	7	525
ZL4ID	SSB	21	5	525
ZL2RI	SSB	13	6	390

As seems to be the usual thing for March, old man Skip had quite an effect on contacts in the 20 metre QSO Party.

Comments indicate, however, that those taking part, or at least those who forwarded logs, had an enjoyable three hours. There were 22 logs submitted from the 43 VKs who were active, while ZL numbers were seven logs from a reduced total of 10 active.

Overseas members, John Stewart W6GTI, and Les Clarke ZS5NU, worked by VK6HC would have been eagerly sought if they had been on longer.

Cross-checking of logs shows that some of our Old Timers must still be using phonetics of the *ACK, TOC* and *EMMA* days. Smarten up fellers, there were quite a number of call sign errors. But maybe it is due to all those old carbon microphones still in use out there!

In your returns would you please indicate the mode you were using.

Thank you for your comments on the contact exchange suggestions. There will be no change certainly for the August Parties (remember there are two, 40 and 80 metres), but these columns will keep you posted.

73 John VK3ZC.

Intruder Watch

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077

Reports were received with thanks for the month of February, from the following: *VK2s BQS; DEJ; PS; QL; SWL A Bradford; VK3s XB; XU; VK4s AKX; BG; BHJ; BTW; DA; KAL; KHZ; MR; NGF; VK5s BJF; GZ; TL; VK6s JQ; XV; XZ; VK7RH; VK8s HA and JF.*

There were 835 broadcast (A3E) intruders reported — 271 CW (A1A), 282 RTTY (F1B), 156 other modes (Woodpecker, R7B Multiplex, etc) and 73 intruders gave identifying call signs.

Of particular interest to Norman VK4BHJ and Jim VK2BQS, will be the news that the following intruders are all part of the Vietnamese News Agency — VCN; KFB; CFK; VZC; NBZ; PKJ and VMO. Last, but certainly not least is VRQ.

NEW ADDRESS

Bruce VK6XZ, the Western Australian IW Co-ordinator advises of a change of mailing address. Any future reports can be sent to Bruce Hunt VK6XZ, 59 Pembury Road, Thornlie, WA. 6108.

Also, we have a new Intruder Watch Co-ordinator for the VK1 area, namely Alan Hawes VK1WX, PO Box 547, Dickson, ACT. 2602. Welcome to the ranks Alan, and belated congratulations on the move from VK1KAL to VK1WX. ACT amateurs or SWLs can send any reports to Alan.

BEACONS AND TAXI-CABS

The 'V' Beacon, on or about 7.003 MHz, is also being heard in the Federal Republic of Germany. This was reported as being in Vladivostok by the IARU Region 2 Monitoring System Co-ordinator, W7JIE.

We are still trying to establish the origins of the alleged taxi-cab operation being heard on the lower end of 28 MHz, and purporting to e coming from Hong Kong. Taiwan.

EXPANSION OF BANDS

And an interesting note from *Practical Wireless,* January 1986. Proposals made by the ARRL seeking expansion of the current 28 MHz band section used by the US Novice Licence Holders could, if adopted, create world-wide problems. The international beacon system mainly operates within the agreed sub-band 28.200-28.300 MHz; the ARRL proposal is to allow multi-mode novice operation down to 28.100 MHz (the current US lower phone limit is 28.300). The use of CW, SSB and RTTY within this sub-band will obviously affect the beacon system and it should be remembered that if the novice allocation goes through, US general and higher licence classes will automatically be allowed use of the same frequencies, with up to full legal power. It is further understood that ARRL, in recognition of this fact, would initiate proposals to reorganise and move the beacon network.

It is pleasing to report that I have received my 109 QSL cards back with DXCC from the ARRL, and have to worry about the cards no longer!

See you next month, and will be looking for your intruder report!

Acknowledgments: VK4AKX and Practical Wireless.

CITIZEN OF YEAR AWARD

Sam Voron VK2BVS was recently one of five people awarded Citizen of the Year by the Willoughby Council.

Sam was honored with this award for the tireless efforts and compassion shown by him during the Mexican Earthquake Disaster.

When not *out and about* demonstrating amateur radio to the public at every possible opportunity, Sam operates from his shack below his parents house in Roseville, New South Wales.

Sam's interest in radio was aroused when, as a lad of 11, he happened to hear the Voice of America via shortwave on his small transistor radio. Sam wrote off to VOA advising them that he had heard their signals and was thrilled to receive VOA QSL cards.

With this success, Sam then wrote to ships, planes, and the US navy, army and air force. He has heard Francis Chichester on his solo voyage around the world, the first Chinese space satellite (playing the national anthem) in 1966, Radio Hanoi broadcasting to US servicemen and an aeroplane flying to Khartoum from Cairo radioing a message that it was turning back as one propeller had stopped. By this time Sam was hooked on radio, and was given a walkie-talkie when he was 13, so that he could talk as well as receive.

By the time he was 17, Sam had sat for the amateur examinations and received his radio licence.

Last November, Sam relayed a message of congratulations from President Reagan to the WIA on the occasion of its 75th Anniversary. Sam believes that President Reagan has a national communication plan that, in the event of a nuclear attack, should all other communications be wiped out, the first links to bring the country together will be amateur radio operators across the nation.

Abridged from North Shore Advocate, 9th April 1986.

Sam proudly displays the Citizen of the Year Award, presented to him for service during the Mexican Earthquake.

Photograph courtesy Adam Todd.

AMSAT Australia

Colin Hurst VK5Hi
8 Arndell Road, Salisbury Park, SA. 5109

OSCAR-10 APOGEES
J U N E 1 9 8 6

DAY #	ORBIT #	APOGEE U.T.C HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LON DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
1st June										
152	2231	0123:48	-24	255	272	42	282	54	308	75
2nd June										
153	2233	0042:52	-24	246	278	51	291	62	351	80
3rd June										
154	2235	0001:55	-24	236	286	60	307	70	42	77
154	2237	2320:59	-24	227	299	68	336	76	66	69
4th June										
155	2239	2240:02	-24	217	322	75	19	76	77	61
5th June										
156	2241	2159:06	-23	208	4	78	50	71	84	52
6th June										
157	2243	2118:10	-23	199	43	74	67	63	90	43
7th June										
158	2245	2037:14	-23	189	64	66	77	55	94	34
8th June										
159	2247	1956:18	-23	180	75	58	84	46	99	25
9th June										
160	2249	1915:22	-23	170	83	49	90	37	103	17
10th June										
161	2251	1834:25	-23	161	89	40	95	29	107	9
11th June										
162	2252	0613:57	-23	336					249	2
162	2253	1753:28	-23	151	94	32	99	21	111	1
12th June										
163	2254	0533:01	-23	327					253	9
163	2255	1712:32	-23	142	98	23	104	13		
13th June										
164	2256	0452:05	-23	317			248	-0	258	17
164	2257	1631:36	-23	133	103	15	109	5		
14th June										
165	2258	0411:08	-23	308			252	7	262	26
165	2259	1550:40	-23	123	107	7	113	-2		
15th June										
166	2260	0330:11	-23	299	251	4	257	14	266	34
166	2261	1509:44	-23	114	112	-0				
16th June										
167	2262	0249:15	-23	289	255	12	262	22	271	43
17th June										
168	2264	0208:19	-23	280	260	19	267	31	277	52
18th June										
169	2266	0127:23	-23	270	265	28	272	39	285	61
19th June										
170	2268	0046:27	-23	261	270	36	279	48	298	69
20th June										
171	2270	0005:31	-23	252	275	45	287	56	323	77
171	2272	2324:33	-23	242	282	53	298	64	11	79
21st June										
172	2274	2243:37	-22	233	292	62	318	71	50	74
22nd June										
173	2276	2202:41	-22	223	308	70	352	75	68	66
23rd June										
174	2278	2121:45	-22	214	337	75	30	74	78	57
24th June										
175	2280	2040:49	-22	205	19	76	54	67	85	48
25th June										
176	2282	1959:53	-22	195	49	70	68	59	90	39
26th June										
177	2284	1918:57	-22	186	66	63	78	51	95	30
27th June										
178	2286	1837:59	-22	176	76	54	84	42	99	22
28th June										
179	2288	1757:03	-22	167	83	45	90	34	103	13
29th June										
180	2290	1716:07	-22	158	89	37	95	25	107	5
30th June										
181	2291	0455:40	-22	333					252	4
181	2292	1635:11	-22	148	94	28	100	17	112	-2

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA
Control: VK5AGR
Amateur Check-In: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.685MHz — Summer: 7.064MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305MHz

AMSAT SW PACIFIC
2200 UTC Saturday
21.280/28.878MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGMENTS

Material has been received from Bob VK3ZBB, Graham VK5AGR and AMSAT-TELEMAIL.

JAS-1

From AMSAT-TELEMAIL is the latest information on the Japanese (JAMSAT) Amateur Space-craft.

Introduction

JAS-1 is an amateur radio satellite, promoted by JARL as a joint venture with NASDA. NEC constructed *system* units (Space frame, power supply, etc), while JAMSAT, with its selected volunteer JAS-1 project team, designed and built the *mission* units (transponders, telemetry/command and house-keeping micro-computer) and ground support systems.

JAS-1 has been completed and has passed all the necessary tests. It is in a clean room waiting for the launch, currently scheduled for August 1986.

The outline of the unique satellite is explained in the following.

Many thanks to Harold Price NK6K, for his assistance in the preparation of this article.

N6MBM/JA2PKI,
Tak Okamoto,
191 Pinestone,
Irvine, CA 92714

JAS-1 Mission Objectives

1 JAS-1 will provide reliable world-wide amateur radio communications.

2 JAS-1 will enable radio amateurs to study tracking and command techniques.

3 JAS-1 will offer an in-space *proving ground* for radio amateur developed and built transponders and sub-systems.

4 JAS-1 will provide NASDA an opportunity to carry out a *multi-payload* launch using their new *H-1* launcher. (NASDA has never engaged in a multi-payload launch, thus the JAS-1 project will offer NASDA an excellent opportunity by providing them with an active payload having its own telemetry-beacon and transponder for ranging).

Form and General Dimensions

The space-craft takes the form of a 26-facet polyhedron, which measures 400 x 400 x 470 mm and weighs 50 kg.

Launch and Orbit

JAS-1 will be launched into a circular low-earth orbit, which will be non-sun synchronous and non-polar.

Launch Vehicle	H-1 two stage rocket
Launch Number	Test Flight #1
Launch Site	Tanegashima Island, Japan
Launch Date	August 1986
Estimated Inclination	50 degrees
Estimated Altitude	1500 km
Estimated Period	120 minutes
Estimated window per	20 minutes/pass

OSCAR-10 APOGEES
JULY 1986

DAY #	ORBIT #	APOGEE U.T.C HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LON DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
1st July										
182	2293	0414:42	-22	323					256	11
182	2294	1554:15	-22	139	99	20	104	9		
2nd July										
183	2295	0333:46	-22	314			250	1	260	20
183	2296	1513:19	-22	129	103	12	109	2		
3rd July										
184	2297	0252:50	-22	305	249	-1	255	9	265	28
184	2298	1432:23	-22	120	108	4				
4th July										
185	2299	0211:54	-22	295	254	6	260	17	270	37
5th July										
186	2301	0130:58	-22	286	258	14	265	25	275	45
6th July										
187	2303	0050:02	-21	277	263	22	270	33	282	54
7th July										
188	2305	0009:06	-21	267	268	30	276	41	292	63
188	2307	2328:08	-21	258	273	38	283	50	308	71
8th July										
189	2309	2247:12	-21	248	280	47	293	58	340	77
9th July										
190	2311	2206:16	-21	239	288	56	307	66	25	76
10th July										
191	2313	2125:20	-21	229	300	64	330	72	54	70
11th July										
192	2315	2044:24	-21	220	319	71	5	74	69	62
12th July										
193	2317	2003:28	-21	211	352	75	37	70	78	53
13th July										
194	2319	1922:32	-21	201	29	73	57	64	85	44
14th July										
195	2321	1841:36	-21	192	53	67	70	56	90	35

Estimated passes per day — Eight passes/day

Designed Life
Estimated lifetime is three years.

Special Features of JAS-1
JAS-1 carries two separate mode J transponders. One is a linear transponder, and the other is a digital *store-and- forward* transponder mainly for non-real-time communication between stations located in different time zones.

The reasons for selecting mode J for this first Japanese amateur radio communications satellite are:

It is becoming increasingly difficult to use 145 MHz for a satellite downlink because of man-made electrical noise and other interference.

The planners of JAS-1 wanted to provide a successor to AMSAT OSCAR-8's mode J, which was originally developed by JAMSAT's engineering team back in 1976.

435 MHz is much quieter than 145 MHz as a downlink band, it is comparatively free from man-made noise and sky-temperature effects. The digital transponder will provide error-free *information exchange.*

Transponders
The linear transponder = mode JA:

The passband will be 100 kHz wide. The transponder will have an output of one watt PEP. Ground stations will need an uplink power of 100 watts EIRP. The sidebands will be reversed, ie the uplink is LSB; the downlink is USB. There will be a 100 mW CW beacon switchable to PSK when needed.

Uplink pass band: 145.900 MHz — 146.000 MHz
Downlink pass band: 435.800 MHz — 435.900 MHz
Beacon frequency: 435.795 MHz
Translate frequency: 581.800 MHz

The digital transponder = mode JD:

There will be four 145 MHz band input channels using Manchester coded FM for the uplink. Ground stations will need 100 watts EIRP. There will be one downlink channel in the 435 MHz band using PSK, the output will be one watt RMS. Channels are:
Uplink channel 1: 145.850 MHz
Uplink channel 2: 145.870 MHz
Uplink channel 3: 145.890 MHz
Uplink channel 4: 145.910 MHz
Downlink channel: 435.910 MHz

The data format is HDLC. The protocol is AX.25 Level 2 Version 2. The data transfer rate is 1200 BPS for both uplink and downlink.

The reasons for not using Bell-202 type FSK modulation are:
To reduce the parts count onboard JAS-1. Using Manchester coded FM for uplink reduces JAS-1's onboard decoder chip count by 16.
To improve the downlink margins. Due to JAS-1's tight power budget, only one watt is generated by the downlink transmitter. A more efficient modulation scheme like PSK is required.

JAS-1 will be a store and forward system but not a real time digipeater. Digipeating is not an effective use of a low orbit satellite such as JAS-1, which has a limited communication foot-print and visibility time.

JAS-1 has four uplink channels for one downlink channel. This is because the difference of channel efficiency between uplink and downlink. An uplink channel is shared by several ground users. Since the ground users cannot hear each other, and are listening to the downlink channel anyway, the uplinks are subject to packet collisions. This scheme is called Pure ALOHA, *and is known to have a theoretical maximum channel throughput of 18.4 percent. The JAS-1 downlink is 100 percent efficient, since only JAS-1 transmits there. To balance capacity, as well as add redundancy, four uplink channels are used. The combined uplink efficiency is then 4 * 18.4 percent or 76 percent. The remaining downlink time is used for general messages and telemetry data.*

JAS-1 will accept a connect from only one station at a time with the software scheduled for initial use. Multiple connections will be supported in subsequent software updates. General packet operation is scheduled to begin in November 1986.

Digital Hardware
The micro-processor is a MIL-STD-883B screened NSC-800 running with a 1.6 MHz clock. This is the only processor on board. It controls the digital transponder and also acts as an Integrated Housekeeping Unit (IHU). The on-board memory has a 1.5 MB physical storage capacity. 48 chips of NMOS 256k DRAMs are used. A hardware based error-detection/correction circuit is incorporated to protect the entire 1.5 MB and provide a one MB error-free memory area. The system program occupies some 32 kB, the rest is used for message storage.

The memory unit is physically divided into four identical 256 kB memory cards, any one of which can be assigned as the system area. Up to three cards can be turned off. This design provides system redundancy and allows command stations to control power consumption without total loss of service.

JAS-1 has five hardware HDLC controllers. Four of them are for the uplink channels and one is for the downlink channel. In total, these controllers consist of some 140 CMOS MSIs, yet their power consumption is less than that of a single NMOS LSI HDLC controller like WD-1933. JAS-1 does not have any ROM but has simple hardware boot-strap-circuit instead. This design is to increase system flexibility and reliability.

Power System
25 of JAS-1's 26 faces are covered with a total of 979 pieces of solar cells. They will generate 8.5 watts of power at the beginning of life.

JAS-1 employs 11 Ni-cad battery cells with a capacity of six amp-hours. These supply 14 volts average to JAS-1's main power buss. The 14 volts is converted and regulated to +10, +5 and -5 volts.

Antenna System
JAS-1 has three antennas. Two-metre reception antenna; slant quarter-wave mono-pole isotropic 70 cm transmission antenna with -4 dBi gain; Mode-JA: Slant Turnstile LHCP +Z axis +3 dBi gain and Mode-JD: Slant Turnstile RHCP -Z axis +3 dBi gain.

Attitude Control
Forced shaking using the earth's geomagnetic field. JAS-1 has two 1 ATm sq permanent magnets in its Z axis.

Telemetry
Analog system telemetry has 12 analog channels and 33 system status flags. This telemetry can be sent without the help of the NSC800 micro-processor and will be turned on automatically by the separation from the H-1 launcher.

The telemetry is sent on the 100 mW beacon on 435.795 MHz in CW, switchable to PSK.

Digital system telemetry has 29 analog channels and 33 system status flags. This software driven telemetry can be sent in any format, and can include short text messages. This telemetry can be sent on either the mode JD downlink channel (435.910 MHz) or the mode JA CW beacon (435.795 MHz).

Command
A simple three-channel tele-command system is used for global control; functions, eg JA transponder *ON/OFF*, JD transponder *ON/OFF*, and independent *ON/OFF* of the A-0 beacon. An additional 37 channels are available mainly for controlling the digital transponder.

On-board command from the NSC-800 is also available.

Ground Stations
Mode-JA
A ground station set-up which was used for AMSAT OSCAR-8 mode-J can be used for JAS-1 mode-JA. A station with a 10 watt two- metre SSB transmitter and a 10 dBi beam for uplink; and a 70 cm receiver (with low NF) with a 15 dBi beam for downlink; should be adequate for this job.

Mode-JD
In addition to the mode-JA set-up, FM mode is required for the two-metre transmitter.

Since JAS-1 uses the standard AX.25 protocol and 1200 BPS data rate, ground stations will be able to use a TAPR-style TNC, a two metre FM transmitter and a 70cm receiver without modification.

The JAS-1 modem, a special interface board,

will be made available containing the Manchester modulator and an audio PSK demodulator allowing connection to the *modem disconnect* connector of a TAPR-style TNC. The modem also connects to the audio input and PTT of the two-metre FM transmitter and to the audio output and frequency control (option) of a 70 cm SSB receiver.

Although JAS-1 will be available to individual access, the general amateur community will benefit from *JAS-1 gateways.* Messages relayed through gateways can be sent world-wide and is as easy as sending messages to distant stations via a W0RLI HF gateway.

Outline of Project History/Schedule

November 1982	Freezing of conceptual/ preliminary design
December 1982	Preliminary design
April 1983	Detail design
— June 1984	Engineering modules integration and test ground support system integration
July — December 1984	Flight model #1 integration and EIC/MIC
January — March 1985	Flight model #1 general test
January — August 1985	Flight model #2 integration and EIC/MIC
August — November 1985	Flight model #2 general test
November 1985	Software development

AMSAT-AUSTRALIA NEWSLETTER

Graham VK5AGR, the National Co-ordinator of AMSAT-Australia is now producing a monthly newsletter containing updated satellite news, orbital predictions, keplerian data and operating hints and techniques. The objective of the newsletter is to keep the amateur populous informed on the latest information available and to realise funds for the funding of projects or the purchase of an item/s of hardware for a future amateur satellite project, eg Phase 3C, Phase 4 or whatever. The cost of the Newsletter is $15 and cheques made payable to WIA (SA Division), should be forwarded to Graham VK5AGR, QTHR.

To date the Newsletter has been a resounding success within Australia and now comments from overseas amateurs, who have received copies from friends in Australia, indicate that they would like something similar in their own countries.

The Newsletter is basically an eight-page compendium of the nitty-gritties that are relevant in the short-term, items that are out-of-date when printed in this column, and to date it has included some small computer programs specifically for satellite determination, the latest telemetry blocks from OSCAR-10 and OSCARs 9 and 11.

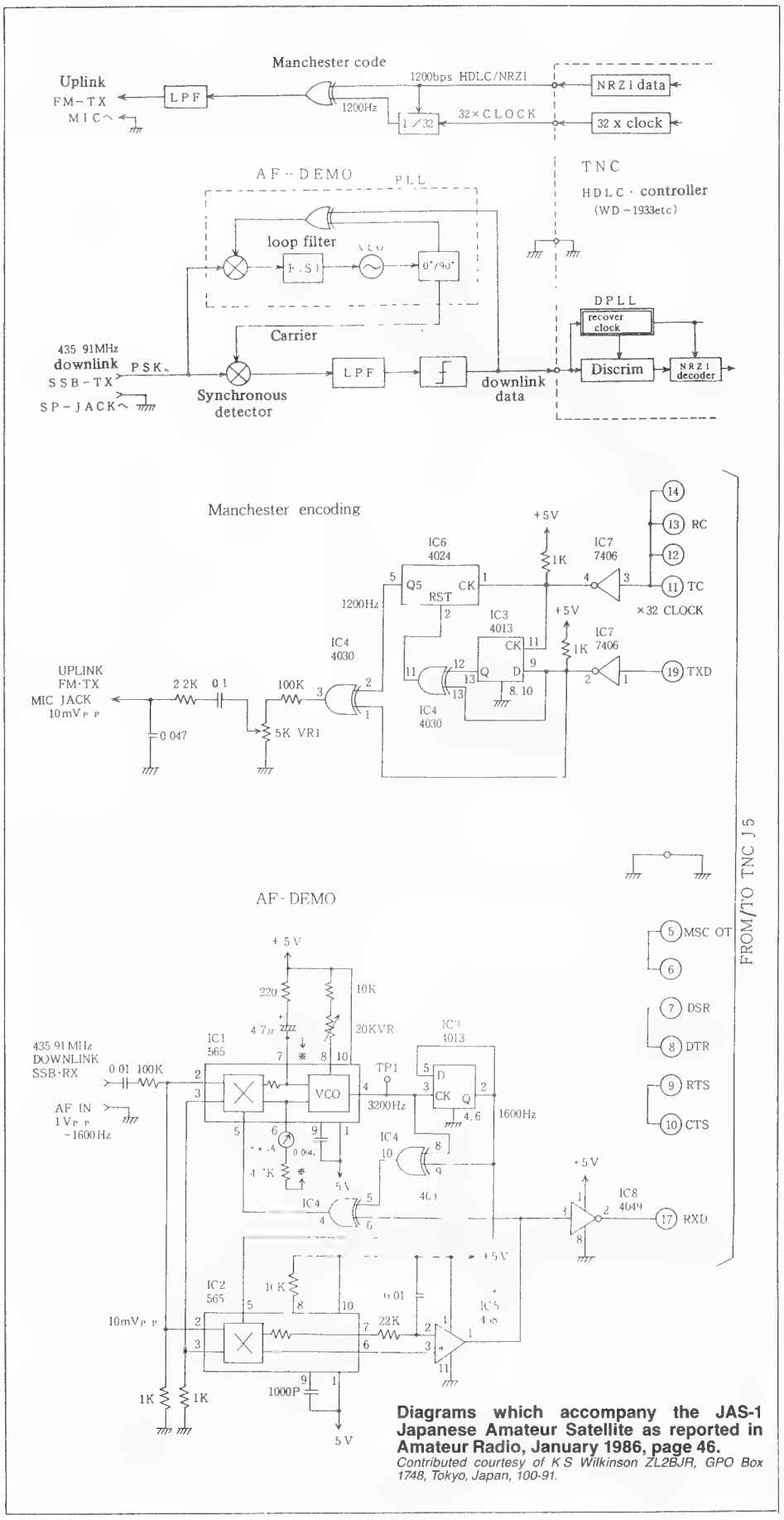
If you are at all interested in satellite communication, this Newsletter is a must.

AMSAT-AUSTRALIA DONATION TO PHASE-3 PROGRAM

Following the success story for 1985 that the AMSAT-Australia Newsletter has been, Graham VK5AGR, recently forwarded a cheque to AMSAT-DL for an amount of $5000, as a donation towards the Phase-3 Program. The $5000 was made up by $3000 from AMSAT-Australia Newsletter Subscriptions, plus donations from the Software Service and proceeds from the PC-1246 Pocket Computer Sales, supplemented by a $2000 donation by the WIA (SA Division), being a significant part of the profits of the 400 VK5 two-metre pre-amplifiers that were marketed by the Equipment Supplies Committee of the SA Division. A large percentage of these pre-amplifiers were purchased by listeners to, and operators of OSCAR-10. This sizable donation is a credit to the untiring efforts of Graham VK5AGR, to whom we are all heavily indebted.

PHASE-3C LAUNCH INFORMATION

The current launch date for Phase-3C is 21st September 1986. To keep all relatively informed on the latest developments of assembly and integration, AMSAT-USA are loading weekly bulletins to AMSAT-TELEMAIL. The bulletins would be significantly out-of-date if used in this column, due to publishing lead-times, however the information is disseminated each week during the AMSAT-Australia Sunday Evening Net. To give an idea of what information is being uploaded to the



Diagrams which accompany the JAS-1 Japanese Amateur Satellite as reported in Amateur Radio, January 1986, page 46.

Contributed courtesy of K S Wilkinson ZL2BJR, GPO Box 1748, Tokyo, Japan, 100-91.

bulletin board, Status Report Number 3, dated 3rd March follows.

The AMSAT-DL team of Werner Haas DJ5KQ and Hanspeter Kuhlen DK1YQ, spent the weekend at the AMSAT laboratory in Golden, Colorado.

Purpose of their trip was to exchange information, particularly for the RUDAK experiment, as well as other matters.

DK1YQ also met with a TAPR representative on Sunday. 16 mm and photo documentation of the construction activities and the team will return to Germany on 3rd March.

The RF Power Amplifier module will be slightly larger than projected. As a result the mounting points on the stringers are no longer valid, and new ones are being made to accommodate the changed dimensions.

The Arm Safe Plug has been pre-wired and is installed.

The Export Licence Application forms were not received by W3GEY prior to the weekend. The originals are complete and the entire file with all needed copies will be in his hands in a couple of days.

The Main Battery Pack was wired and the battery case was assembled and closed. The main battery is now mounted in the spacecraft, but will likely be removed one more time to allow installation of the last mounting screw for the fuel tank.

No progress was made on mounting the Helium Bottle Bracket. That awaits the manufacture of additional mounting parts. An alternative mounting plan has been decided upon.

A milestone of sorts has been achieved. The Main Fuel Tank has been mounted and all mounting ascrews except one have been installed. That will require temporary removal of the main battery as noted above. The fit of the Main Tank was unusually good and the installation was relatively routine. The reaction from W3GEY was *"Something must be wrong . . . that was too easy."* Those familiar with the build of the two prior Phase III satellites will remember that the nylon spacers which mount between the tank and the centre core of the spacecraft had to be of various different thickness. In the present instance all the nylon spacers are identical.

The Thermal-Vac schedule remains unchanged. Presently a feed-through connector for the Vacuum chamber is being sought and hopefully will be promptly located. There is at least a chance that the Vibration Test may also be done at the Martin-Marietta facility. That question is presently undecided.

Again, as in the past, the contests of this report should be made available to Packet and Bulletin Board Systems.

de WB0RLY . . . thanks to TELEMAIL

SATELLITE ACTIVITY FOR PERIOD 1ST TO 28TH FEBRUARY 1986

LAUNCHES

The following launching announcements have been received:

1986-010A	**PRC-18**	Feb 01	*China*
1986-011A	**Cosmos 1729**	Feb 01	*USSR*
1986-012A	**Cosmos 1730**	Feb 04	*USSR*
1986-013A	**Cosmos 1731**	Feb 07	*USSR*
1986-014A	**USA-15**	Feb 09	*USA*
1986-014E	**USA-16**	Feb 09	*USA*
1986-014F	**USA-17**	Feb 09	*USA*
1986-014H	**USA-18**	Feb 09	*USA*
1986-015A	**Cosmos 1732**	Feb 11	*USSR*
1986-016A	**BS-2B**	Feb 12	*Japan*
1986-017A	**MIR**	Feb 19	*USSR*
1986-018A	**Cosmos 1733**	Feb 19	*USSR*
1986-019A	**Spot-1**	Feb 22	*France*
1986-019B	**Viking**	Feb 22	*Sweden*
1986-020A	**Cosmos 1734**	Feb 27	*USSR*
1986-021A	**Cosmos 1735**	Feb 27	*USSR*

RETURNS

During the period, 52 objects decayed, including the following satellites:

1985-112A	Cosmos 1706	Feb 09
1985-121A	Cosmos 1714	Feb 27
1986-009A	Cosmos 1728	Feb 11
1986-012A	Cosmos 1730	Feb 13

GENERAL

The Japanese Broadcasting Satellite 2B (BS-2B) was launched from the Tanegashima Space Centre and had tentative orbit elements of Apogee 36322 km, perigee 196 km, inclination 28.5 degrees and period 641 minutes. Transmitting frequency and power were 2.28072 GHz and 1.3 watts.

As at 18th February 1986, 1943 UTC, ATS 1 was located at 56.310 degrees west with inclination 11.983 degrees.

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Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER

56 Baden Powell Drive, Frankston, Vic. 3199

This article has arisen from discussion with, and comment from, several amateurs with many years experience, and from ideas raised in print and at meetings.

We have long been bombarded with the opinion that the main need of our hobby, or the WIA (or probably any club or association with which we are involved), is a *strong infusion of young blood.*

Comments abound on both sides:

— the management is too old, or out of date, set in their ways, unaware of new developments, unwilling to accept new ideas.

— a young recruit is more value than an old recruit.

— the young are vigorous, enthusiastic, prepared to work, and up with modern technology.

— the old have the hindsight of experience.

— we must maintain and increase the number of people who enjoy our hobby.

— if our members drop we lose our lobbying power and privileges.

— change is necessary for growth.

— the present system is okay, why change it?

— amateur radio is such a wonderful hobby that more people should be persuaded to join.

Inevitably, the discussion concludes that we should be recruiting from the youth, but without any clear plan as to means or direction.

The Wireless Institute, in its 75 years, has experienced generally steady growth apart from the short bursts of rapid growth due to the post-war availability of cheap disposals gear and the more obvious period of the CB boom.

It is unlikely that either of these events will be repeated, so if, repeat if, we wish to increase the numbers of amateurs, other more active recruitment techniques must be considered.

It has been suggested that the computer boom could provide recruits. Certainly this is a field where the interest of young people is very high, but the link between computers and radio is much more tenuous than that between CB and amateur radio. It is not likely to interest young people in the technical aspects of radio.

Statistics recently published claim that our major growth is from the middle-aged or retired section of the population. Perhaps we should admit that this is where much of our future lies. This group has the time and resources to be able to make a reasonably long term commitment to the hobby and to the WIA.

They also are probably the group with most ability to *sell* the hobby to young people. Even today, much of our *culture* is passed from grandparents to grandchildren, direct.

A major part of the amateur tradition is the help extended to the newcomer by the experienced operator. (Note that this does not necessarily mean the old helping the young). It is a shame that so often the help and encouragement offered is acknowledged only in the column headed *Silent Keys!*

So, if you have enjoyed someone's assistance, tell them so, and be prepared to reciprocate by in turn assisting a new recruit.

If you believe we need to spread the message about radio, have a go at it yourself.

I do not personally believe that any one group is a better *target* than any other, but you may be able to apply your efforts more towards one particular group — the young, the old, the disabled, or even the female!

More importantly, if you come up with a good idea or technique, please be prepared to share it. Let me know about it, so I can pass it on. Many are only waiting for a few hints.

73, Brenda VK3KT.

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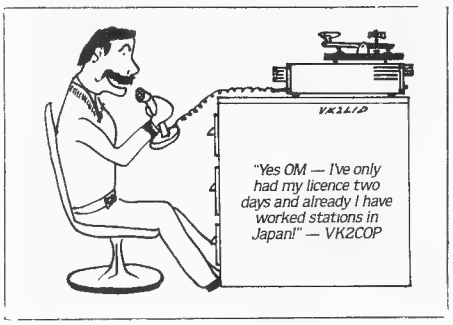

Magazine Review

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General : (C) Constructional : (P) Practical without detailed constructional information : (T) Theoretical : (N) Of particular interest to the Novice : (X) Computer Program

RADIO COMMUNICATION March 1986 — Gamma Matching Towers and Masts (P)

HAM RADIO January 1986 — Frequency and Level Standard (C N). Calibrated S Meter. Coaxial Stub Filters (G N)

RADIO (Indian Radio Societies) May 1985 — General Information on amateur radio in India. Regulations, Conferences, etc. (G)

73 Magazine December 1985 — Cellular Radio (G). 1985 Index.

VHF COMMUNICATIONS 3/1985 — New English Translator Available Colin Brock. Magazine now resumed. 70 cm Helical Antenna (P). Crystal Controlled Source for 10 MHz. (C). PCB — Integrated Coaxial Tuned Circuit (P).

CQ-TV No 133 February 1986 — 24 cm FM-TV Transmitter (P). 70 cm Coaxial Collinear Antenna. (C)

WHAT'S NEW IN ELECTRONICS January 1986, February 1986 — Trade and General Information about Test Equipment, Components, Hardware, etc newly available. Includes Educational Material.

73 MAGAZINE February 1986 — Scanning for the TR 2400 (C). RIT for the FV 101.

QST March 1986 — Weather Maps on Dot Matrix Printer (P X). Mountaintopping (G). CW Transmitter for 902 MHz (C).

WORLDRADIO March 1986 — Two Views on Cellular Radio. New Office Bearers for YLRL. FCC Highlights. General amateur radio News and Views.

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THOUGHT FOR THE MONTH

Anticipating change is to benefit from it.

Club Corner

VK3RVL — two-metre repeater

The Robinvale two-metre repeater, VK3RVL, is situated atop the Robinvale wheat silo, adjacent to the town centre. It was first placed on-air under test in November 1984, at the residence of VK3YEJ, where construction took place most Monday nights and whenever time permitted.

The construction crew consisted of Graeme VK3YEJ (who's small, but well-equipped shack was used as a work-shop), Roger VK3KIY (who donated his pride-and-joy power supply), Geoff (an amateur when he can find the time), and Mark VK3KYG.

VK3RVL was placed in its final position on the silo in September last year. Many may think it was a long time under test, but it was no easy task getting the unit and the installers to the top of the silo so it was necessary to make sure it was in top operating condition prior to final installation.

The equipment consists of an STC MTR 151, with a FET preamplifier in the receive line. The cabinet also houses the power supply, control unit, cavities and battery, in case of power failure. There is one cavity in the receive line feeding a Hoxin 7.5 dB antenna and two cavities in the transmit line feeding a Hoxin 6 dB antenna. Both antennas are mounted on the same mast with about three metres vertical separation, with an extra set of radials between the transmit and receive antennas.

The repeater is on channel 7050 plus shift; time five minutes; mode FM; power 40 watts ERP; range 70 km range approximately; height 115 metres ASL.

The repeater is monitored most waking hours.

Contributed by Mark Harris VK3KYG

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AUSTRALIAN AMATEUR PACKET RADIO ASSOCIATION

The 12 months since the formation of this group has been one filled with activity and growth — membership has grown from 12, in the initial stages, to 130 now. This gives some indication of the rapid increase in interest in this mode.

At the first annual general meeting, it was decided to change the name of the group from the TAPR User's Group to the Australian Amateur Packet Radio Association.

As interest was primarily in AX.25 protocol and equipment was becoming available from other than TAPR, it was felt a less specific name was desirable. Indeed, the group are now supplying a system designed by Chris VK4BCM, which uses a simple modem and a Commodore 64 computer.

A digipeater, VK2RPH, has been installed at Hornsby, on 147.575 MHz, which is providing access between the Sydney and Newcastle local areas.

Wollongong-Sydney-Newcastle-Brisbane Link-up

At Easter, John VK2YGV and Norm VK2TOP from Tamworth set up on mountain tops in Northern New South Wales and were able to provide a link between Newcastle and Brisbane. Stations in Sydney and Wollongong were able to work into Brisbane for the first time. This is believed to be a record for packet linking in Australia, as the distance is of the order of 600 miles (965 km).

Packet Boards

The association is, at present, supplying the TAPR TNC2 boards as bare-boards with EPROMS and a system manual, for $125 including postage. This board, when completed, costs a total of approximately $270. All components are available locally.

Commodore C64, 128, and SX.64 owners — The packet program written by VK4BCM is currently being distributed by the association. This package comprises a disc with the program and some utilities, a bare printed circuit board and manual for assembly and operation. The printed circuit board is for a simple modem using the EXAR chips 2206 and 2211. This board is connected to the user port of a Commodore computer without using the Commodore RS232 interface. This program provides all the usual facilities of the TAPR TNCs, digipeating, beacons, file transfers, etc. The price of this package is $48. Parts to complete the modem costs approximately $30. Software updates will be announced through Digipeat, the Club's Newsletter/ Inquiries and orders for these packet units can be made to the Secretary AAPRA, 59 Westbrook Avenue, Wahroonga, NSW. 2076.

Technical inquiries can be made to Barry White VK2AAB on (02) 487 1428, or in Sydney on repeater 7250.

Membership of the Association is $6 per year.

Bulletin Boards

At present, there are a number of AX.25 packet bulletin boards operating in Sydney and Newcastle.

These PBBs are all on 147.575 MHz. In the future, some rationalisation must take place. There are two schools of thought, one has it that there should be one PBB for the whole network and the other has it that there should be one for each major area. In our present context, that would mean one in Sydney, one in Newcastle, and one in Canberra.

They will not achieve their full potential until unattended operation is possible, hopefully sometime in the near future.

The association would like to hear comments on this matter from anyone interested.

Contributed by Barry White VK2AAB.

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OLDEST RADIO CLUB REFORMS

The Waverley Amateur Radio Society meeting was held on 8th April, 1986, at the Edgecliff Scout Hall, with the aim to re-activate the oldest amateur radio club in Australia. The society was originally founded in March 1919, with a transmitting and receiving licence issued by the then Department of the Navy in August 1920. This licence has now been held continuously for over 65-years. Early experimenters in amateur radio, members of the Waverley Society, started broadcasts from the St Albans Hall in Coogee, and St Lukes in Clovelly during 1921 and 1922, which lead to the founding of the present day 2BL and 2FC radio stations. Experiments also took place with television, the licensing authorities prohibiting commercials in 1935.

An enthusiastic group of 27 attended, with interest expressed by more via letters and telephone calls. A brief history of the Society was given, with photographs loaned by the original 1920 sponsor of the radio licence, Gordon Thompson VK2AVT, and copies of the original licence were displayed around other historical documents. A steering committee was formed — Manfred Meyer VK2RV, Collin Mack VK2EAZ, Eric Van De Weyer VK2KUR, and Duane Foster VK2VE — who will act as an interim executive until elections can be held. A general discussion followed with numerous valuable suggestions coming from the floor to assist the re-organisation of the Society.

For those interested in electronics, computers, or amateur radio, contact either Duane or Eric, at PO Box 126, Randwick, NSW. 2031.

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DEVIL NEWS from the NW Branch

The April meeting saw an attendance of 20, including one new member, Malcolm VK7NCA. Welcome Malcolm. The minutes of the previous meeting were read and accepted, and out of them it was decided that the 10th June should be a special meeting that the ladies could attend. At this meeting, Camp Quality will be spoken about, and as some members will have to attend the Camp for one-week to provide the communications, it is thought the ladies should know in advance the time it will take up and the details involved.

The Club Roster for the Sunday Broadcasts was discussed and a good response was received from the membership to continue doing the relays for all bands. The Club appreciates the willing effort and hard work done by these dedicated members.

The Gong Award was to have been awarded to Max VK7KY. Max was attempting to explain to a visitor how the repeater operates and explained that if an operator spoke for more than three-minutes the repeater would *GONG*-out. On trying to stress this point, that is exactly what happened — it gonged out. This provided an excellent demonstration. If Frank VK7ZFH had not forgotten to take the award to the meeting it would have been presented to Max, however Frank received it again for another month for his *bad memory!*

The President, Bob VK7KAB, thanked members for being on 80 metres to speak to a group of high school students at his QTH, thus making a good night for the students. Bob is attempting to get a station operational at Savage River High School and even the teachers were impressed with the contacts he made during the night. He is also trying to get a station operational at Wynyard High School and would like to hear from anybody who would be willing to assist.

One of the members now has a new operator in his shack — or should it be a second operator? Jack VK7WJ received a small Easter present — a kitten. It was wrapped in Easter paper and presented to him by a charming young lady, his adopted grand-daughter. Jack has had to cover quite a few things in the house and the shack but he will not be parting with the present for quite a long time to come.

We have been told that when we do the communications for the horse trials next year, we will have to be on our best behaviour as HRH Princess Ann will be competing. (We may have to wear a collar and tie for the occasion!).

The horse trials, held at Wynyard, proved to be a successful day. The operators provided emergency communications and score transfer for the event and was the biggest event covered by the Club to this date.

The course has 31 fences for the senior competitors to jump and the novice competitors had 26 fences to jump. There were 12 operators used, 11 at field stations with one at a central base station receiving messages from the field stations.

Members who participated were VK7s ZPT; ZHA; ZBT; EG; AX; WL; ZAP; OL; DC; WJ; KDR and ZRD.

Thanks to John VK7ZPT, WICEN Co-ordinator, for this report.

The Billycart Derby, that was held at Lillico Straight was also a great success, with plenty of spills and thrills for the competitors. Thanks to the operators who participated at both events.

The General Meeting concluded at 9pm, allowing time for the guest speaker to complete the evening. Shane Cathcart gave an interesting talk about the State Library. It has 420 000 books, seven mobile units, and a staff of 600. This is one of the best systems in Australia, with 14 branches in the Hellyer region alone.

There is more to this library than meets the eye. A very good example was given to Florien who asked for the name of a certain book and was surprised to know that he could obtain it. Also, Syd VK7SF had a problem repairing tape-recorders and used to borrow a book from the library until it disappeared from the shelf. He asked if it would be possible to see if they still had it and in a very short time Shane found that it was in Hobart and promised to have it returned for Syd.

Many other facilities available to the public were discussed, concluding with a very good item about cars.

Contributed by Max Hardstaff VK7KY

LIFE MEMBERS

Life membership of the Coffs Harbour and District Amateur Radio Club was awarded to Rick Fletcher VK2BKV and Max Francis VK2BMK, in recognition and appreciation of years of service to the club.

At a special meeting, held on 19th March 1986, members voted unanimously in favour of this motion. Congratulations Rick and Max.

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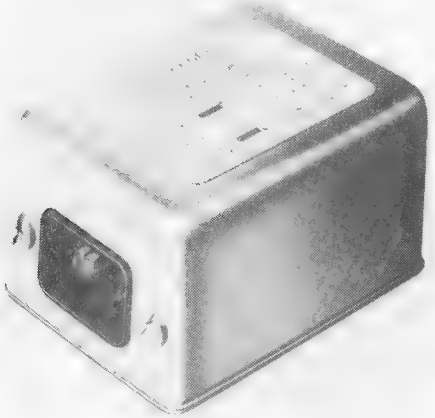
A R Showcase

POWER-LINE FILTERS FROM WESTINGHOUSE SYSTEMS

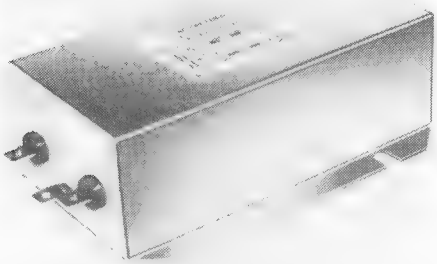
FN-346 — FILTER WITH HIGH ATTENUATION



This new power line filter is designed for currents of 1.6; 2.5; 6 and 10 amps.

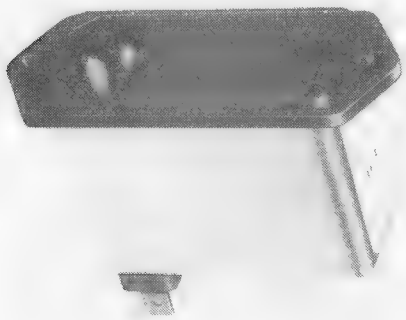
Its excellent attenuation characteristics are similar to those of a two-stage power-line filter. The FN-346 is suited for the suppression of common mode and differential mode interference elimination as well as for the interference elimination of switching mode power supplies and clicks. The power-line filter is equipped with an IEC plug, on the secondary side alternatively with fast-on 6.3 x 0.8 or flex wires.

TWO-STAGE FILTER FOR HIGH CURRENTS



The FN-683 and 684 are designed for currents of 10; 16; 25 and 36 amps. The very good common mode and differential mode attenuation characteristics are effective at a frequency of 10 kHz (frequency range 10 kHz to 300 MHz). These filters are suited for the central computer units and for high current switching mode power supplies. The excellent cost performance ratio makes this product very attractive.

FILTERS WITH IEC-PLUG, FUSES AND EARTH LINE CHOKE



These filters are equipped with two different fuse-holders: type FN-291 with fuse-holder for one fuse; type FN-292 with fuse-holder for two fuses. The fuse-holders can be equipped alternatively with 6.3 x 32 mm or 5 x 20 mm fuses.

They are especially suitable for use in electronic equipment such as office machines, calculators and measuring instruments, due to a good common and differential mode behaviour in the range of 150 kHz to 300 MHz. For the application in peripheral equipment, both series are available with an earth line choke, type FN-291E and FN-292E.

Further enquiries about these products should be directed to Westinghouse Systems, PO Box 267, Williamstown, Vic. 3016. Phone: (03) 397 1033.

CB EQUIPMENT

GFS Electronic Imports recently announced their intention to further enhance their extensive range of amateur radio and commercial products by adding Citizens Band equipment to the inventory.

The *highly regarded Electrophone* brand will feature prominently among the 27 MHz and UHF transceivers. Eight years of experience in the amateur and commercial communications field has provided GFS with an expertise that most others selling CB do not have. For example, they are able to advise customers on such subjects as the correct antenna and coaxial cable to use for a particular application.

GFS also have a fully equipped workshop so they may meet the servicing requirements of the CB market including backup service on the products they sell.

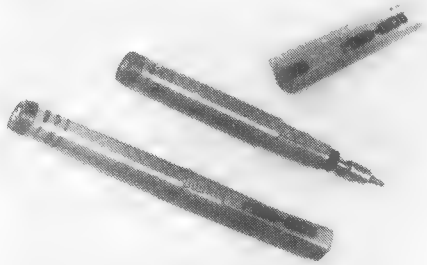
In the area of accessories, they stock beams, a range of different low loss coaxial cables, antenna rotators and non-conductive high strength *Debeglass* guy wire.

For further information contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Vic. 3132. Phone (03) 873 3777.

ELECTRONICS SHOW

The 1986 Perth Electronics Show will be held from 31st July to 3rd August 1986 at Perth's Claremont Showgrounds, and will be the largest and most comprehensive consumer electronics and homeware exhibition in Australia and the South East Asian region.

Over 12,000 square metres of exhibition space has been sold in 13 pavilions and most major electronic/electrical companies will be represented.



For further information contact Chris Gulland, PO Box 745, West Perth, WA. 6005, or phone (09) 382 3122.

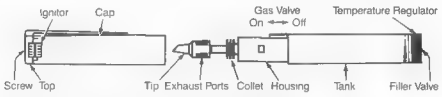
PORTABLE SOLDERING IRON

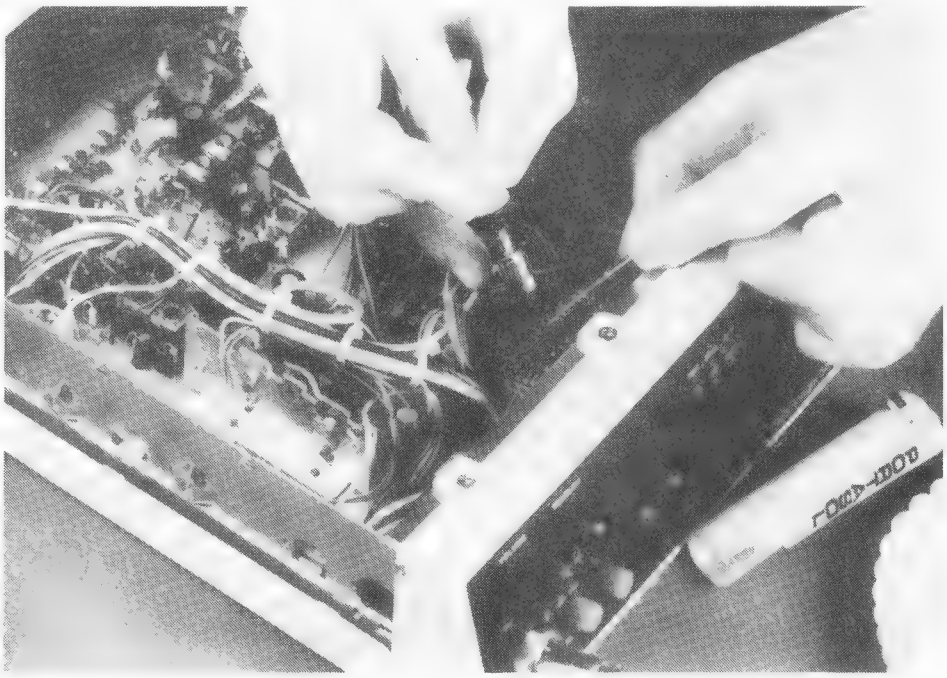
The Portasol is a portable pen-sized soldering iron used by people in the electrical, mechanical and engineering fields.

It is a butane gas powered iron, ignited by a flint ignition in the cap. It has a 10 to 60 watt temperature control and each fill with gas lighter fuel gives 60 minutes of continuous use. The Portasol also comes with three tip sizes and each tip gives 30 hours of use. (Maximum tip temperature is 400 degrees C.

It is the smallest soldering iron available and it can be used in almost all conditions, indoors and out. The design features also include important safety advantages. When the cap is replaced the gas is automatically switched off and when the user is finished with the Portasol there is no need to wait for it to cool, or find a suitable place to rest it as the cap is able to withstand up to 250 degrees. There is little waste or leakage since the user can switch on and off at will. It also take just 20 seconds to reheat, and because it is static free, it is ideal for use with CMOS and other static-sensitive components.

For more information contact Stephen Treble or Don McNeill at DRM Industries on (02) 997 5522, or write to 14 Tengah Crescent, Mona Vale, NSW. 2103.





NEW LITERATURE

Analog-Digital Conversion Handbook, a comprehensive guide to conversion for engineers and scientists, contains 22 chapters and is published by Analog Devices, Inc and Prentice-Hall.

The third edition of this well-known handbook has grown to 700 hard-bound pages, with seven new chapters, bibliography, and index. An easy-to-use table of contents summarises the book's five sections, which range from converter uses in circuits, sub- systems and systems to *Guide for the Troubled* — preventing and curing conversion-system problems.

The section, *A/D and D/A converters*, discusses operation, technologies, architectures, designs and how they are used for best results. A new section, *Converters for Special Applications*, covers conversion for video speeds, synchros and resolvers, high resolution, and wide dynamic ranges — as well as V/F and F/V. A new section entitled, *Related Circuits and Devices;* includes sample-holds, references, switches and multiplexers and DSP ICs.

The book is available from Parameters Pty Ltd, 25-27 Paul Street North, North Ryde, NSW. 2113; or 1064 Centre Road, Oakleigh South, Vic. 3167 to whom all enquiries should be directed.

LINEAR AMPLIFIER

The Transworld Electronics T500M is an all solid state linear amplifier designed for land or marine mobile operation or for base station use with the optional AC power supply. The amplifier uses a new series of high power RF transistors operating directly from a 12 volt supply source and does not require a power supply for mobile operation. The amplifier draws no standby current and only draws maximum current on voice peaks. This keeps the average current requirements to a level well within the capabilities of modern vehicle generating systems and for the first time makes high power land, air or marine mobile operation a practical reality.

The amplifier is designed for remote control and can be mounted in any convenient location.

It covers the range 2-30 MHz, and the broadband design means there are no tuning adjustments for any frequency in the range. The drive requirements are 60 watts minimum, and the gain of the amplifier is typically 10 dB. This tenfold increase in power output gives a substantial increase in signal strength and does much to compensate for the low efficiency of the mobile antenna. The amplifier is compatible for use with virtually any SSB transceiver with a power output in the range 60-150 watts PEP.

The broadband design means there are no limitations on frequency coverage or number of channels.

Installation is simple. The amplifier is inserted in the coaxial line to the antenna, and the power and control connections are made. The only operational adjustment is to set the exciter ALC to provide the correct drive level.

The T500M is rated for operation over the temperature range .30 to +60 degrees Celsius. The duty cycle is 50 percent transmit/receive at an ambient temperature of 25 degrees Celsius in the SSB and CW modes. The duty cycle should be reduced at higher temperatures. A thermostat on the heat-sink switches the amplifier off if the heat-sink temperature exceeds 75 degrees Celsius.

For Technical Specifications and further information please contact Scalar Distributors Pty Ltd, 20 Shelley Avenue, Kilsyth, Vic. 3137, phone (03) 725 9677 or Sydney (02) 502 2888, Brisbane (07) 395 1188 or (07) 395 1817, Perth (09) 446 9177.

DOUBLE RIDGE MAGIC TEES

Adams-Russell waveguide Magic Tees are designed to handle extremely high power while maintaining excellent overall performance characteristics over 3:1 bandwidths.

This capability allows Adams-Russell to offer proven designs with measured electrical performance as follows.

WRD650D28 frequency range 6.5-18.2 GHz; VSWR 6.5-7.2 GHz 2.1:1 maximum, 7.2-18.2 GHz 1.5:1; coupling 3.1 ±.3 dB, collinear isolation 14 dB minimum; E-H port isolation 30 dB minimum.

WRD750D24 frequency range 7.5-18.2 GHz; VSWR 1.5:1 maximum; coupling 3.1 ±.3 dB; collinear isolation 14 dB minimum.

E-H port isolation 30 dB minimum; power handling* 50kW peak 1kW CW average.

** Power handling testing has been limited by the availability of high power transmitters. Ultimate levels are yet to be determined.*

Insertion loss (dissipative and reflective) are included in the coupling tolerance.

Mechanically, Magic Tees are supplied in a two inch (50mm) cubic form with cover flanges (clearance or tapped holes with helical inserts available). Gasket grooves can be added to the tee as well as a built-in 50 watt fourth port termination for those who need only three ports.

For further information contact Scalar Distributors Pty Ltd, as above.

WICEN News

Ted Gabriel VK4YG
WICEN CO-ORDINATOR, REGION ONE
PO Box 245, Ravenshoe, Qld. 4872

CYCLONE WINIFRED

This year's Wet Season in Northern Queensland began quietly enough and appeared as though it would be fairly dry in some inland areas of the cattle country. However, on Wednesday, 29th January, monsoonal activity, about 100 nautical miles (185 km) east of Cooktown began to intensify and the cloud mass, seen by the weather satellite, began to take on the familiar circular pattern of a cyclone, with the barometric pressure falling steadily.

The cyclone, by this time code-named *Winifred*, started moving slowly to the south-east, intensifying as it travelled parallel to the coast-line.

Heavy rain commenced falling over a wide stretch of the North Queensland coast, rivers and streams began to rise, and by evening, the railway line near Babinda was cut by rising flood-waters.

Region One WICEN operators commenced cyclone track plotting, with Alan VK4BAJ, Cairns Area Net Controller, in charge of the VHF stand-by net on the VK4RCA repeater.

Amateurs in areas likely to be affected by the cyclone checked into the net with weather and equipment serviceability reports.

Townsville Region One-A WICEN operators were also alerted, and a HF link was established on 7.080 MHz.

Cyclone track plotting is carried out on large scale charts marked with a latitude and longitude grid, showing the coast-line and main population centres. Since the hourly meteorology department reports broadcast by OTC Coastal and Shipping Radio Stations are used, distances are expressed in nautical miles and wind speeds in knots. (Townsville and Thursday Island Radio Stations transmit cyclone watch messages and gale warnings on 2.201 and 4.428.7 MHz.

On the morning of the 30th, Winifred was located at 15 degrees 10 minutes south and 147 degrees east, with a central pressure of 975 mbs and wind speeds near the centre of 70 knots (130 km/h). Later in the day it became stationary, although intensifying and the pressure had fallen to 970 mbs.

During Friday, she again continued to move slowly parallel to the coast until she was about 100 nautical miles east of Cairns. Winifred then turned south and then later in the day headed ominously south-west towards the coast. At this time the central pressure was 965 mbs and wind gusts were 100 knots (185 km/h).

Region One WICEN remained in contact with coastal amateurs through VK4RCA with more stations checking in during Friday night. Heavy rain was falling in the area between Cairns and Innisfail and local winds were increasing to gale-force.

During Saturday, 1st February, Winifred continued moving slowly towards the coast. With continual rain and increasing wind speed, road and rail traffic was disrupted. Cairns International Airport was closed to traffic and by midday, the barometric pressure had fallen to 960 mbs, with centre wind gusts to 119 knots (220 km/h).

The regional State Emergency Service (SES), which had been on stand-by alert, went into full-activation in all coastal centres and on the Atherton Tablelands. Communication operators, including many amateurs, were then called for duty at their centres, together with rescue crews.

As wind speeds increased, falling trees and flying debris cut power lines, blacking-out the whole area. Fortunately, most SES Centres have generator sets and batteries to maintain communications, however, late Saturday, telephone links in the area also failed throwing an extra load on the radio sections.

The telephone failure was caused by the large microwave dish aerials, on Mount Bellenden Ker being moved off beam-line on their fittings by wind gusts in excess of 135 knots (250 km/h).

It was at this time that the SES requested assistance from WICEN as their VHF and UHF channels were over-loaded with the extra traffic. HF and SSB frequencies were also fully engaged with local and relay traffic.

Mike VK4AMO, the Cairns Club Liaison Officer, activated the Club Station, VK4HM, ably assisted by Claude VK4KDQ and John VK4VKL.

Message handling commenced when VHF links were set up with Peter VK4BDK, at Innisfail SES Headquarters, Mario VK4MS, in Ingham, and the Townsville Club, VK4WIT, at their SES Headquarters.

High and Dry! A victim of Cyclone Winifred.
Photograph courtesy Innisfail Advocate

Winifred crossed the coast late on Saturday evening south of Innisfail, with the eye passing over Silkwood where a short period of calm was experienced.

Wide-spread structural damage was caused to buildings (particularly older style wooden houses), sugar cane crops were flattened, farm buildings destroyed and roads were flooded or blocked by falling trees. The towns of Milla Milla and Malanda were in the path of the fury and many houses were unroofed and damaged. One man was killed when he was blown off the roof he was attempting to fasten down.

Winifred moved inland in a westerly direction, gradually losing intensity but still accompanied by heavy rain which swept away or damaged bridges on inland roads.

As soon as the wind speed abated, SES rescue crews, assisted by volunteers and Army and Navy units, moved into the disaster area to render assistance to the injured and homeless survivors.

The SES called for volunteers from the Cairns Radio Club with VHF hand-held and mobile units to provide communications for the Army and Navy units.

Club President, Colin VK4EX, together with Mike VK4AMO, Ray VK4BRC and Nick VK4YT moved with the service units whislt John VK4VKL was with the SES team as a driver.

Casualties and injuries were surprisingly light thanks to the swift warnings by Police and SES personnel through local broadcast and television stations before the blackout.

As soon as weather conditions permitted, several injured persons were airlifted to Cairns Base Hospital from the disaster area by the SES and other Helicopters.

The Army unit organised a team of local vehicles to light the Innisfail airstrip so that an RAAF *Hercules* aircraft, loaded with tarpaulins and other urgent supplies, could carry out a night landing.

For the weary radio operators there were many more hours of traffic handling, as relief operations were stepped-up and the mammoth clean-up task began in earnest. Where-abouts and welfare queries from anxious relatives also added to the workload.

Finally, when Telecom workers had restored telephone links, WICEN and many SES Centres were able to close down after a job well-done.

The extent to which amateur radio operators helped to maintain the SES HF Network and provide general WICEN VHF communications during the emergency can be seen from the lists below. Some 35 North Queensland amateurs served their communities during Cyclone Winifred and their efforts are a credit to the amateur radio fraternity.

POINTS OF INTEREST TO OPERATORS

In recent years, the SES has acquired more sophisticated radio equipment and established a chain of UHF repeaters along the Queensland coast. However, this has caused problems with the training of communications operators who did not have experience in this new mode. Thus, for some time, amateur radio operators have been involved with SES communications as Group Leaders, Instructors, and operators, particularly in smaller country centres. WICEN, through local clubs with facilities such as VHF repeaters, have been able to provide extra channels.

Also, WICEN being an independent service, has the ability to prepare before the event, keep a cyclone track plot, gather information from operators and be ready to activate a full network when required, whereas the SES is not usually activated until emergencies happen and/or a disaster area is declared.

Cyclones, which are violent rotating windstorms, accompanied by heavy rain and low barometric pressure, cause heavy destruction which is confined mainly to areas on either side of their track. Thus communication centres with VHF repeaters just clear of that track may be able to remain serviceable and be ready to assist after the cyclone has passed.

The Cairns Amateur Radio Club's two metre repeater VK4RCA (channel 6950), is located on Mount Bellenden Ker, which, at an altitude of 5200 feet (1584m), commands a large area of the rugged coastline and tablelands.

This repeater and the SES two-channel UHF repeater remained on air during the entire period, in spite of being subjected to estimated wind-speed gusts between 135 and 170 knots (250 and 300 km/h).

The VK4RCA antenna is fibreglass and, while suffering some surface cracking, is still serviceable. An aluminium Yagi antenna, intended to link with the Townsville repeater VK4RAT, vanished during the blow.

Past experience with antennas at this site has indicated that high wind speeds cause excessive vibration in aluminium elements which results in crystallisation and corrosion, leading to eventual failure under gusty conditions. These points should be considered when designing aerials for mountain-top repeaters.

The CARC is preparing to activate its second two metre repeater, VK4RTA, on channel 6675. This repeater will be situated at Longlands Gap, at the southern end of the Atherton Tablelands. At an altitude of 3770 feet (1150m), it will also cover a wide area, including much of the lonely Kennedy Highway to the Gulf Country. Its ability to back-up VK4RCA in emergencies will be of vital importance to the region.

Tropical *Cyclone Watch* and *Cyclone Warning* messages from the Bureau of Meteorology are issued to the public through local broadcast and television stations and these are expressed in the metric system.

For WICEN operators, and others who may be involved in cyclone track plotting, a table of conversion factors follows:

— kilometres = statute miles x 1.609: statute miles = kilometres x .6213

— kilometres = nautical miles x 1.853: nautical miles = kilometres x .5396

— statute miles = nautical miles x 1.1515: nautical miles = statute miles x .8684

On nautical and plotting charts, one degree of latitude equals 60 nautical miles measured at the location's latitude.

Cyclone watch ad warning messages, plus gale warnings are broadcast from the following Coastal Radio Stations on 2.201 and 4.428.7 MHz (SSB Phone) at the times shown.

Brisbane: VIB 2233; 0318; 0833 UTC
Rockhampton: VIR 2248; 0218; 0633 UTC
Townsville:VIT 2133; 0333; 0748 UTC
Thursday Island: VII 2303; 0248; 0648 UTC

All are 24-hour service except Rockhampton.

For Canberra and Darwin facsimile transmissions refer to Australian notices to mariners, 1/1/86, or the Bureau of Meteorology.

Amateur radio operators involved with the SES were: Mike VK4AMO; Nick VK4YT; and CARC members (Cairns) — Bob VK4WJ; Allan VK4PS; John VK4AFS; and TARC members (Townsville) — Fred VK4MFW (Atherton) — Ted VK4YG; David VK4ADW; John VK4MJH (Ravenshoe/Heberton) — Brian VK4VDC; Terry VK4ATY (Eacham Shire) — Mario VK4MS (Ingham).

WICEN-CARC members involved in disaster area communications were: Alan VK4BAJ; Colin VK4EX; Ray VK4BRC; Albert VK4CL; Gordon VK4AGZ; Wilf VK4ZNZ; John VK4AJE; Peter VK4BDK; Norman VK4FGG; Tony VK4FOX; John VK4SZ; John VK4VKL; Barry VK4VCQ (now VK4FCQ); Claude VK4KDQ; Bill VK4FET and Dale VK4KDM.

REFERENCES AND ACKNOWLEDGMENTS
Australian Notices to Mariners: RAN Hydrographic Service
Cyclone Tracking Map: Bureau of Meteorology
Region One WICEN Plan: VK4YG
Photograph: Innisfail Advocate

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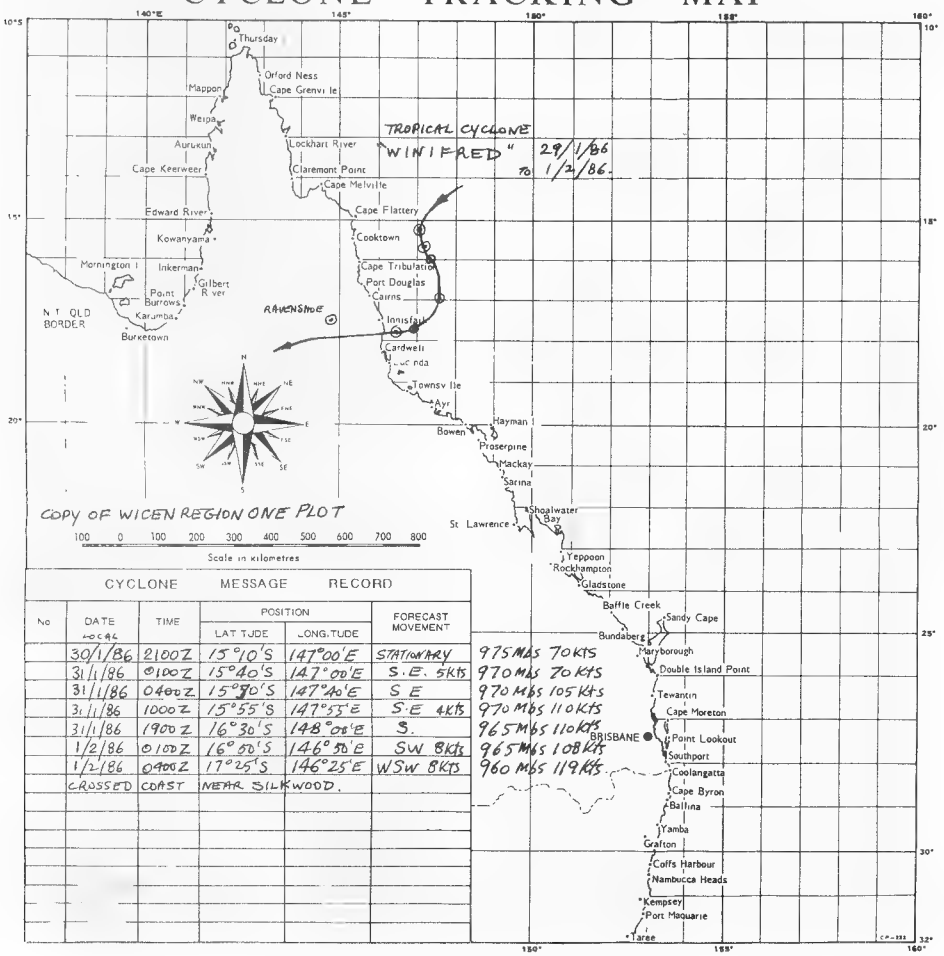
CYCLONE TRACKING MAP



CYCLONE MESSAGE RECORD

No	DATE LOCAL	TIME	POSITION LAT TUDE	POSITION LONG.TUDE	FORECAST MOVEMENT
	30/1/86	2100Z	15°10'S	147°00'E	STATIONARY
	31/1/86	0100Z	15°40'S	147°00'E	S.E. 5KTS
	31/1/86	0400Z	15°50'S	147°40'E	S E
	31/1/86	1000Z	15°55'S	147°55'E	S.E 4KTS
	31/1/86	1900Z	16°30'S	148°08'E	S.
	1/2/86	0100Z	16°50'S	146°50'E	SW 8KTS
	1/2/86	0400Z	17°25'S	146°25'E	WSW 8KTS
	CROSSED	COAST	NEAR SILKWOOD.		

MANLY WARRINGAH RADIO SOCIETY

The Annual General Meeting will be held on 9th July 1986, at 7.30pm. See next month's Club Corner for full details.

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VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW. 2150

The Annual General Meeting was held on 5th April 1986. A report has been given to members via the Broadcast on the 6th April. A written report on the meeting will be included in a later Mini-Bulletin.

There were 645 ballot papers returned for the election. Of these, 25 were informal. Subsequently, a further 30 showed up as a result of late posting. Those elected were as follows:
Mary Jane Cant VK2CMJ; Roger Henley VK2ZIG/NWH; David Horsfall VK2KFU; Peter Jeremy VK2PJ; Tim Mills VK2ZTM; Jeff Pages VK2BYY and Dennis Williams VK2XDW.

The meeting opened at 1410 and closed at 1850 hours. The Returning Officer for 1986/87 is Peter O'Connell VK2EMU.

VK2 1986 COUNCIL

The new Divisional Council met on Friday, 11th April and the major office-bearers for 1986-87 were elected as follows:

President	*Peter Jeremy VK2PJ*
Vice-Presidents	*Roger Henley VK2ZIG*
	Tim Mills VK2ZTM
Secretary	*Jeff Pages VK2BYY*
Secretarial Assistant	*Roger Henley VK2ZIG*
Treasurer	*David Thompson VK2BDT*
Assistant Treasurer	*David Horsfall VK2KFU*
Affiliated Clubs Liaison	*Mary Jane Cant VK2CMJ*
Member Services	*Roger Henley VK2ZIG*
Repeater Committee Chairman	*Dennis Williams VK2XDW*
QSL Bureau Liaison	*Dennis Williams VK2XDW*
Dural Property Officer	*Peter Jeremy VK2PJ*
Parramatta Property Officer	*Roger Henley VK2ZIG*
Broadcast Officer	*David Horsfall VK2KFU*
Mini-Bulletin Editor	*Tim Mills VK2ZTM*
New Membership	*Dennis Williams VK2XDW*
Publications	*David Horsfall VK2KFU*

The Education Service, WICEN, Dural, Parramatta and Repeater Committees will be notified in a future Mini-Bulletin.

CLUB INSURANCE

A report on a (possible) *Public Liability Insurance* package has been prepared and distributed to many of the clubs in the State. Copies are available from the Divisional Office.

ACTIVE AGAIN

Waverley ARC (VK2BV) is currently being reformed after a few years of in-activity. It is to cater for those with radio and electronic interests in Sydney's Eastern Suburb.

A reminder that these notes can only cover a small part of the activity in the State. Informed amateurs listen to the Sunday Broadcasts — do you?

NEW MEMBERS

The VK2 Division would like to welcome the following new members who were in the April intake.

S Brighton VK2DSB, Illawong; J W Dargan Assoc, Greenwich; S Dudgeon (Ms) Assoc, Chatswood; D K Findley VK2KDF, (Overseas); J J Gerhard VK2TH, Wagga Wagga; L J Gray Assoc, Northbridge; R A Hocking Assoc, Tenambit; C V D King VK2NHL, Botany; J G Lucas VK2CJL, Wahroonga; M Nowicki VK2JMN, Canley Vale; A E Sheppherd VK2EDS, Maroubra; J A Viglino VK2CJV, Ryde.

1985 HOME BREW CONTEST

The winner of the 1985 contest was Michael Jones VK2KMU, who constructed, from a kit article, the Omega, nine-band SSB/CW HF transceiver. The project was described in the English magazine *Ham Radio Today.* Michael was presented with his prize at the recent Seminar.

Now is the time to remind all that the present years contest is now open, entry forms are available from the Divisional Office and the closing date is the 31st December 1986.

JUNE HOLIDAY WEEKEND

A reminder that, over the weekend of 7th and 8th June, the Oxley Region ARC will be conducting their Annual Field Day at Port Macquarie.

REPEATERS

The Armidale Amateur Radio Club has submitted an application to establish a 70 cm repeater on an elevated site to the east of the city, to serve the region. The requested channel is 8175. Call sign is VK2RNT. The application is in order for processing.

During April, a posting of information was made to all repeater groups. It was mainly to update their listings for the new Call Book. If your group is as yet to return the various forms, please do so without further delay.

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VK3 WIA Notes

WIA VICTORIAN DIVISION
412 Brunswick Street, Fitzroy, Vic. 3065

ANNUAL GENERAL MEETING

The Annual General Meeting of the Victorian Division of the WIA was held on 14th May. A full report of the AGM will appear here shortly.

TIME CAPSULE

The Time Capsule was sealed at the AGM, and will not be re-opened until 2010 when the Institute celebrates the WIA 100th Anniversary.

WANTED OR NOT—WANTED SERVICE

A disposals equipment service is available to members through the Sunday Morning Broadcasts via VK3BWI.

The WIA has received permission from DOC to broadcast details of equipment for sale or items wanted. The service can include the price being asked for the equipment.

DOC has stressed that the offering of disposals equipment on-air is only authorised through the WIA weekly broadcast. This privilege does not extend to nets, hook-ups, or general QSOs by radio amateurs.

Amateurs who have equipment they wish to dispose of, or are looking for a particular item of gear should write to the WIA Victorian Secretary. The information will be checked and put on a list for the Broadcast. Anyone wanting to make contact with the potential seller or buyer of an item broadcast must contact the Wireless Institute Centre between 10am and 3pm weekdays for further details.

LINTON-HARRISON PAPER

The Victorian Divisional Council met on 20th March, and at the request of Jim Linton VK3PC, the paper *Amateur Radio — Future Direction* was discussed.

The paper proposed four steps to improve the current licensing and examination standards and conditions:
Introduction of a new Novice licence with a lower grade theory examination
Enhancement of the current Novice licence, and the addition of Data Transmission mode privileges
Introduction of an Intermediate Novice licence with additional privileges
Removal of Defined Mode restrictions and an increase in the power limits.

Following discussion, a motion proposed by VK3XV and seconded by VK3BBM was carried by Council as follows:
*Council **does not agree** with the lowering of the technical standards for entry into the amateur ranks in any way, and believes persons not achieving the current standard are well catered for by the Citizens Band service.*
*Council would be prepared to support an up-dated Novice licence of the same technical standard, with additional questions to be included on data transmission modes — **CW to be retained.***
Council considers Novices should then be allowed data transmission privileges on a portion of the UHF band, and on a 100 kHz segment of the 10 metre band below 28.350 MHz. This is to allow contact with US Novices using data modes.
Council believes Novices could be allowed a small segment of the UHF band for voice transmission, and possibly a spot frequency on VHF to make use of existing digital repeaters.
*To provide an additional entry point into amateur radio for Computer Hobbyists and experimenters, Council would give serious **consideration** for an additional licence class. This licence would be exactly the same as the up-dated Novice — without the CW requirement. Holders of this class of licence would have no HF privileges at all.*
Council would support the removal of Defined Mode restrictions for AOCP and LAOCP holders in the VHF and UHF spectrum only. Council considers the Power Limit is not within the scope of the discussion paper, and should be discussed as a separate issue. The subject of Unattended operation is believed to be already addressed in the updated DOC Operating Handbook.

(Note: Current holders of a Novice licence would automatically be allowed all privileges of the Updated Licence).

Council requests that all amateurs take special note of paragraph 3 of the motion which states the council is prepared to give consideration to this option.

Members could be of the opinion that, if this proposal was to be recommended, it may well have an *adverse effect* on our hobby and Council is *not prepared* to give any decision without reference to the members of the VK3 Division.

All members should give this matter serious thought and make your wishes known to Council *in writing.* All correspondence should be addressed only to The Secretary, WIA (Victorian Division), 412 Brunswick Street, Fitzroy, Vic. 3065.

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NEW MEMBERS

We extend a warm welcome to the following amateurs who became members of the Victorian Division during March 1986.
J Chan VK3CBQ; James Gay VK3BBF; John Hill VK3ASS; John Ho VK3AVF; Henry Lim Meng Fung 9M2HL; Paul McMahon VK3DYP; Jackson Perkins and Douglas Richards VK3CCY.

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QSP

TOWER FUND

Amateurs in Kentucky have established a fund to assist John Thernes WM4T with legal expenses to fight restrictive tower ordinances. John's case, which has been remanded from the Federal Appeals Court back to the Federal District Court, has already cost him an estimated US$16 000 in legal fees with no end in sight.

From The ARRL Letter

VK4 WIA Notes

Bud Pounsett VK4QY
Box 638, GPO, Brisbane, Qld. 4001

1986 RADIO CLUB CONFERENCE

Again this year, the venue for the Conference was Griffith University, on the south side of Brisbane. This campus is set in a lovely bushland setting and is very accessible via the South-East Freeway, being an easy drive of about 10 minutes from the centre of Brisbane City. The meeting room is good acoustically and has a large blackboard, overhead projector and the seating rises in tiers from the front. Each delegate sits at a desk and has an unobstructed view. The cafeteria was available for meals but this year, accommodation was not available. This was notified only a couple of weeks before the Conference and threw the organising committee into disarray. However, a few telephone calls later and the situation was resolved, accommodation being arranged in the general area near to the University.

There were 17 clubs represented, from Cairns in the north to the Gold Coast on the southern border. Visitors to the Conference were Michael Owen VK3KI, the Honourable Ian MacPhee MHR, the Shadow Minister for Communications, Lance Bickford VK4ZAZ, from SES State Headquarters and John Bews VK4KJB, who gave a talk on Packet Radio.

On Sunday morning, Mr MacPhee spoke to the gathering and, not only sought questions from the delegates, but spent considerable time in asking questions of the delegates. What better way for a politician to gain knowledge of a special subject than to ask the people at the very grass-roots of the matter. All felt that Mr MacPhee's visit was a very valuable one — to both parties.

The Conference discussed the paper, *Amateur Radio — Future Direction.* Thoughts expressed were many and varied but most were not in favour of the lowering of standards or concentrating on recruitment from any one group. Most agreed that our object should be to make the public more aware of amateur radio. There were no real solutions found but the paper certainly has brought forth plenty of discussion and this, most would agree, was its aim.

Both club motions and Federal motions for the 1986 Federal Convention were dealt with, but cannot be recorded here, the minutes of the Conference run to some 22 pages of foolscap.

Both of the Queensland Federal Representatives gained valuable insight into the general feeling toward the motions for the 1986 Federal Convention and, as in past years, the Queensland voice over the ANZAC weekend was heard loudly and clearly at the Convention in Melbourne.

The WIAQ Council is greatly indebted to these people who worked so hard to bring the 1986 RCC together, Anne Minter VK4KZX; Barry Ker VK4BIK; Aaron Hoppe VK4AHO; David Jones VK4NLV and Anne Stafford.

NEW UHF REPEATER IN QUEENSLAND

The Dalby and District Amateur Radio Club have installed a UHF repeater on Mount Mowbullen in the Bunya Mountains. The frequencies are 438.700 MHz downlink and 433.700 MHz uplink. Please amend your Call Book to include this information.

CORRECTIONS TO 1985-86 CALL BOOK

On page 120 — The South-East Queensland Teletype Group meeting should read the *first* Friday of each month.

On page 113 — The Broadcast Directory, in the VK4 section, delete the words *and 20 metres RTTY at 2000 hours.*

The SEQTG runs a news broadcast at 1000 UTC on Monday evenings. The frequencies are — *two metres, channel 7050; 3.630 MHz and 7.045 MHz. Call sign VK4TTY.*

CYCLONE WINIFRED

CAIRNS PARTICIPATION

When *Winifred* started forming in the Coral Sea on 29th January 1986, VK4BAJ, VK4AMO and VK4YG commenced a tracking plot and set-up a standby Network. Winifred crossed the coast on 1st February, south of Innisfail with a centre pressure of 960 mbs and estimated 220 km/h wind gusts. There was considerable damage to buildings, crops, power and telephone services, and road and rail services were cut over a wide area.

A Disaster Area was declared and SES channels became overloaded. WICEN was requested to provide a VHF network. SES also asked for amateurs with hand-held units to assist the Army and Navy teams. Some 35 amateurs were involved and were able to carry out the tasks allotted to them by the SES.

Official involvement of the Cairns Amateur Radio Club commenced on 1st February and the Club station was manned. Brisbane SES requested a link be set up between Townsville and Cairns, and this was established by the use of the VK4RCA Repeater.

TOWNSVILLE PARTICIPATION

The SES Regional Office was manned from the evening of the 1st February until 3rd, with very little sleep being had by the participants. The SES transceiver at Innisfail failed and Peter VK4BDK made his way, at the height of the cyclone with considerable risk to himself, to get them back on-air.

All amateurs involved were praised for a job well-done and official acknowledgment was received from the Assistant Director of SES Headquarters in Brisbane.

Five-Eighth Wave

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

It is with regret that we report the passing of two well-known Old Timers, Harvey Judd VK5HQ and Alan Heath VK5ZX. Both had been ill for some time and in both cases, it would have been a happy release from pain.

Our sympathy goes to both families and, in particular, in Alan's case to his son Chris VK5ZZX, to Alan's brother Colin VK5FX and Colin's son, Rob VK5ARX.

FURTHER J150 AWARDS to 31st March 1986.

13	VK1HZ	27	VK5SJ(3rd)
14	VK5NBB	28	VK3DJU
15	VK5SJ(2nd)	29	VK2JBM
16	VK5ATU	30	VK2NAN
17	VK3NLR	31	VK6HT
18	VK5OU	32	VK3BCD
19	ZL3KR	33	VK5AJK
20	VK2PXS	34	L40885
21	VK2KFV	35	P29JW
22	VK2CKW	36	JQ1EBK
23	VK2CP/ VK5PWM* *equal time for 150th point		
25	VK5NDB		
26	VK2PKT		

AMATEUR TELEVISION GROUP

The SA ATV Group have had some excellent publicity recently. Thanks mainly to Max Whiting VK5KTZ, who just happens to work in the *Advertiser* newspaper. Max did an excellent article on Jamie Jenkins VK5ZAA, one of the youngest members of the ATV Group, in the Saturday Magazine section of the *Advertiser.* This was in turn picked up by Channel 9 in their *C'mon Kids* program for children, where they interviewed Jamie, and during the session he called up on -air and Lee Cordell VK5NK, on of the oldest ATVers, came back and spoke to Jamie.

I was recently invited to join the ATV Group at their next bi-monthly meeting. What I did not know at the time was that their next meeting was to be a tour of the new Adelaide TAFE college (recently opened by the Duke of Edinburgh), and in particular, the Educational Multi-Media Department where programs are made for schools, etc.

Our guide was John Ingham VK5KG, Federal Video Tape Co-ordinator.

What an eye-opening tour it was, believe me. Television will be watched with a far deeper understanding on my part, in future, and I am sure that the ATV boys would have gained even more from a technical point of view than I did.

My thanks to Rod Rees VK5ACA, their President, Charlie Baldacchino VK5ACF, their Secretary and everyone else for an evening well spent.

BUSINESS FAX TAKES ON

Sending business communications by facsimile has taken on in Australia with industry sources estimating there are now around 30 000 FAX machines in use. This represents an increase of about 33 percent in 12 months.

WIA

S A DIVISION EQUIPMENT SUPPLIES

The famous VK5 2m preamplifier kit . . . still $25

12V 5A P/S kit . . . $15
Connectors
Capacitors
Resistors
Semi-conductors
Toroids
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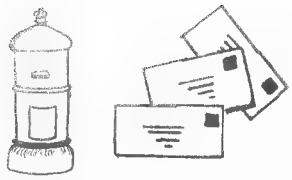

Over to You!

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

DON'T KNOW WHAT I WOULD HAVE DONE

Permit me to add my voice with others on the benefits which flow from WIA membership. In particular, the activities of dedicated people responsible for education and skill building of new members entering amateur radio deserve special mention.

First, the Education (Correspondence) Course supervised by Cec Bardwell was a vital ingredient in getting basic insights into radio necessary to pass the DOC exams. Self study may suit some but if you have not had to swat for exams for many years, then I can thoroughly recommend the course as well worthwhile and cash wisely invested. Constant revision of the notes and problem papers got me there.

Second, the Education Service/Slow Morse Panels of VK2 and VK5 were also vital in being able to acquire the necessary CW skills in sending and receiving. It is in this area that I respectfully offer the following suggestions for better practices.

CW conversations I have tuned into confirm the wide variety of topics in the general traffic. All of the practice passages are educational in the sense that you finish knowing more about something than you did when you began — I have learned how to curry pork chops, about the Urunga Shire Maintenance Program, blood pathology, ocean liners, explorers and more.

In my view, 25 to 50 word passages should avoid those passages that can be journalised. For example, recipes give nouns, measures and timings, etc which are repetitive. Likewise, continuous passages without subject change but with speed change lend themselves to journalising quite readily, and more so if your general knowledge of the subject is wide. Many I heard went for long periods without any numerals. Practice passages which covered the whole alphabet, with numerals and punctuation would seem to be preferable, and one that *fills the bill* quite well is the weather forecast/synoptic situation. Those really kept me on my toes!

Another suggestion I would make is that, similar to the DOC exam, the code be sent at eight and 12 words per minute, spaced to give seven, nine and 11 words per minute overall. I don't under-estimate the skill necessary to do this well.

In conclusion, I would like to thank the WIA office bearers and volunteers involved in these activities. *I don't know what I would have done without them.*

Alan Smith VK2BHF,
10 Banool Avenue,
St Ives, NSW. 2075.
ar

PENFRIEND WANTED

My name is Freddy and I am 35-years-old.

I would like to correspond with some Australian radio amateurs so I may learn more about Australia, and amateur radio in Australia.

Cordially,

Freddy Henckens ON7WT,
Merelstraat 37,
3550 Heusden — Zolder,
Belgium.
ar

TECHNICAL CORRESPONDENCE — SATELLITE PROGRAMS

I refer to VK3AFQ's computer program published in June 1985 AR and his accompanying article on its use for the location of geostationary satellites, published in May 1985 AR.

I find that the program has shortcomings which limit its use, some of which are easily corrected.

1 The program gives accurate results only if the observer is located in the Southern Hemisphere. If a northern latitude is entered, the calculated azimuth is in error. This can be corrected by the addition of a single new line:

331 IF LA>0 THEN AZ = AZ + PI

The program generates azimuth angles which may exceed 360 degrees. This may be easily corrected by the addition of a further new line:

332 IF AZ>2 * PI THEN AZ = AZ — 2 * PI

2 Seemingly quite randomly dependent on the input parameters the program will fail due to overflow error. This is annoying, because of its seeming randomness. These overflow errors may be avoided by using the arc cosx function for DEF FNA(X) in line 300 in lieu of the $\pi/2$ — arc sinX function used by the author. Line 300 then becomes:

300 DEF FNA(X) = ATN (SQR(1-X*X)/X)

However, this last change will give rise to overflow errors if the observer is on the equator and LA = 0. The value of X calculated in line 200 will then also equal 0 and it follows that the attempt to divide by 0 in DEF FNA(X) will again produce an overflow error. This behaviour is quite predictable, unlike the overflow errors produced when $\pi/2$-arc sin X function is used in line 300, and close approximations of azimuth angles may be obtained by entering a small +ve value such as .01 for LA instead of Zero.

It should also be noted that this last change will give rise to overflow errors if the observers latitude LA = $\pm$90 degrees, ie he is at either the North or South Poles. This is of no consequence of course, as the satellites are too far below the horizon at the poles to be of any use to amateurs who might perhaps venture there.

Re the Morse Code Generator Program, AR January 1986 pp8. The reproduction of the program listing is too small and too faint for me to read other than with **great** difficulty. I certainly could not type it into my computer without making literally hundreds of errors. May I make a plea for larger, darker print for such listings in AR for the sake of old timers, such as I. I assume the listing was photo-reduced to permit printing in two columns.

Yours faithfully,

Murray Higgins VK5AQM,
15 Beta Crescent,
Panorama, SA. 5041.

Editor's Note: Computer program listings are photographic reproductions when printed in Amateur Radio (printed in this manner to avoid typographical errors and reduced to conserve space). This is the reason that it is imperative that contributors send computer programs printed with a dark black ribbon. We know of the difficulty and are looking at alternatives such as computer bulletin boards and packet radio. Any other suggestions are welcome.

ar

TECHNICAL CORRESPONDENCE

An obvious error has been pointed out in the Four Watt CW Transmitter article for Novice Notes, April AR. The last paragraph suggests a crystal frequency range of; from 3.526 to 3.800 MHz. This, of course should read *from 3.526 to 3.580 MHz.*

Now that many transmitters have been successfully constructed by other readers, indications are that operating the transmitter from a supply voltage of greater than the nominal 12 volts can cause excessive heat to be generated by the output MOSFET. There are three solutions to this problem:

— fit a larger heat-sink to Q4, or
— reduce the supply voltage to 12 volts or
— reduce the value of bias on the gate of Q4 by changing R14 to 56 ohms.

My apologies for any problems that may have been caused. It appears that the IRF510 MOSFETs may have considerably more spread than was first assumed.

Yours fraternally,

Drew Diamond VK3XU,
Lot 2 Gatters Road,
Wonga Park, Vic. 3115.
ar

SPUTNIK RECORD

I am interested in locating an *authentic* recording of the first satellite to be placed in earth orbit, namely, Sputnik 1.

I am sure someone in the amateur ranks must have made a recording of this satellite.

The recording is required for a talk/presentation I am preparing on the topic *Satellites.*

Any assistance would be greatly appreciated.

Yours sincerely,

John Dunkley VK5JE,
9 Elva Avenue,
Pooraka, SA. 5095.
ar

AN INDIFFERENT DEALER

Recently I decided a particular make and model of rotator (as advertised) might suit my need.

To obtain a brochure on that item cost *three* interstate telephone calls (to the one dealer) over a period of four weeks.

A note from the dealer read *in stock — $725 including delivery and insurance.* Immediately I contacted the dealer (again by telephone) for the transfer of the above sum.

Alas! *We don't have this item in stock. Perhaps in six or eight weeks!*

And . . . The misleading advertising continues.

Henceforth, I will remember this costly and time-wasting exercise, and can only have scorn and contempt for the advertising and trading activities of this dealer.

Frank Walsh VK5NJW,
PO Box 122,
Blackwood, SA. 5051.
ar

COMING TO GRIPS!

I am finding Amateur Radio is becoming a much better publication than when I first started getting it a few years ago. In my opinion, you are really coming to grips with what members require. Keep up the good work.

73

Ben Ronald VK2EHR,
3 Mullawa Place,
French's Forest, NSW. 2068.
ar

AN INSIDER LOCKED ON THE OUTSIDE

Just browsing through the last few copies of *Amateur Radio,* I noticed with great interest that there seems to be some concern among members that new people are not attracted to this noble hobby. The reason in my opinion is that it is generally too difficult for a real amateur to become a radio operator. After all, an amateur is one who is interested in pursuing an art for the *enjoyment* of it, rather than being a professional. With readers indulgence I would like to relate my own experiences.

Some 25-years-ago I was in the Australian Regular Army as a professional soldier and wireless operator in the Signal Corps. I was a CW operator with a CW speed of over 25 WPM. But, we were operators, not technicians. We knew all about aerials, frequencies, dummy loads, microphones and procedures (much more disciplined and stricter than what I hear on the amateur bands), but we learned nothing about resistors, diodes, screwdrivers or soldering irons. This was not necessary, you see, as if something fizzed a mechanic came and fixed it.

Upon leaving the Army, after operating radios full-time for six years, I wanted to get away from radio and entered the business world. However, a couple of friends are amateurs and, after visiting their shacks, I thought of getting into it again for *pleasure.* Now I have some radio equipment in the Study, and a couple of dipoles in the backyard. I joined the WIA and started on the Correspondence Course (a very good one), but the licence seems further away than ever. *Why?*

Firstly, I operate my own business which keeps me occupied for some 65 hours per week. Then, there is my family to whom I wish to devote some

time. Also, I try to put some effort and time into the community, scouts, church, etc. Finally, I cannot make myself at all interested in learning about capacitors, inductors, Ohm's Law, etc. Why should I? If my radio breaks down I will get someone to fix it! My wife operates a steam and dry iron — she doesn't need to know how it works. My children operate two computers but why should they need to know anything about the insides? Yet, when it comes to transceivers, that is different.

Has anyone tried learning subjects they are not interested in and that they know they are not going to use in the future, anyway? All I would like to do is to talk to someone far away occasionally. Nothing special, surely? I sometimes listen late at night (2 am) and I hear people from Israel, Germany and near the Tower of Pisa making DX calls. Either everyone is asleep or on a different band.

Also, I went to a WIA meeting in Brisbane. Once again, these meetings are geared for the technically minded. Amateurs drop in to deliver or pick up QSL cards, call signs talk to each other about their experiences, but there is nothing there for outsiders, as without a call sign, you don't belong.

At the rate I am going, I should be able to sit for my licence in about 1998. This will not help the average age of amateurs. In the meantime, my QSA will remain 0.

Frustratingly,

Roeland Martin,
23 Lairg Street,
Kenmore, Qld, 4069.

USE THEM OR LOSE THEM

I believe that the adage, *if you don't use 'em, you lose 'em* applies not only to muscles and brain cells, but possibly to the WARC-bands as well.

There are some obvious reasons why some amateurs are not making use of the new bands. In the first place, there are still many transceivers and transmitters giving admirable service, but not covering the WARC-bands. The same would apply to ATUs and linears.

In other cases there are carefully-designed antenna systems which the operators are loathe to modify to take the new bands.

In other cases, I think sheer conservatism and an unwillingness to try something new is probably the basic reason why some never attempt to work the new bands.

All this is regrettable, but what is really shocking is to find that use of the WARC-bands was expressly forbidden in the 1986 John Moyle Contest.

Here we are, advertising to the whole world that VK amateurs will not use the WARC-bands in one of our most important national contests.

I am aware that some exclusion applies to other contests, including some important overseas ones.

I would suggest that those designing the rules for contests and awards take the opposite route and give bonus points for use of these bands, at least for say five years, until they are more widely used by the amateur community.

Indeed, there seems to be a case for the WIA to establish a new award especially for the WARC bands in order to encourage their use.

A good example was set by those who drew up the rules for the VK5 Jubilee Award which is running throughout 1986. There are bonus points towards the award for using WARC bands, a formula which other award-designers could emulate.

It is not very difficult to get-out on a WARC band if your rig includes the frequencies. Most of us have a pole, tower or other structure which will accommodate another piece of wire in the form of a dipole sloper/s for one or more of theses bands (try 30 metres for a start). This will not have the gain of a beam which has been tuned and nurtured over the years, but it is a start — and a practical demonstration that we want the WARC bands and are determined to keep them.

Yours sincerely.

Ken Gott VK3AJU,
38A Lansdowne Road,
St Kilda, Vic. 3183.

DISCUSSION PAPER

I have taken the April Editorial to heart and had another look on the Discussion Paper in the February issue. It is a well thought out proposition that deserves careful consideration. One aspect that could be looked at is the operation of so-called *gentleman's agreements.*

The main thrust of the proposal appears aimed at the recruitment of computer enthusiasts. A high-technology, and therefore high-cost direction. This is probably as it should be and merits investigation but one major area of concern does not seem to have been considered.

There are two aspects involved — low cost and ease of acquiring equipment, plus use of Morse Code as a communication medium. These two can go hand-in-hand for a beginner. The building of a simple transmitter such as that by Drew Diamond on page 20, is a much easier starting point than some of the rigs pictured on AR's covers.

Low Cost — Most children of school-age — where we should be, and are, approaching them — do not have a great deal of spending money. Their parents already have steep education expenses and such things as excursions, sometimes interstate, etc. So . . . expensive amateur equipment is one of the major stumbling blocks to recruitment of a large number of potential amateurs. Once they leave school they are no longer so accessible.

Morse Code — I can almost hear you say — *not that one again.* Please bear with me a little while. I spent hundreds of hours getting myself to the point where I passed the AOCP — in the first level mode, ie recognition of letters by their dot/dash construction. None of the training I underwent enabled me to get to second mode, let alone third mode recognition. My mind appears capable of quite high speed operation but does not shift easily to the more automatic modes. First mode is very tiring. I believe very strongly that the methods generally taught — including by the services — are adequate for some people and of virtually no use for others. Some time ago I did a survey of Service Morse Code Schools and could not find one person who knew anything about the psychology of teaching and learning Morse. A couple of people asked me to let them know if I discovered anything. A couple of enquiries overseas did not help. If the services know their average failure rate they can always load their courses to give then the number they want. We cannot afford that luxury.

Summary — Morse Code is a very good, low cost beginning point for potential amateurs. Many amateurs who passed the Morse tests did so with a skill that is not a viable one — it takes too much out of them psychologically to be enjoyable.

I suggest that the WIA should investigate different teaching and learning methods. Perhaps computer centred methods with visual display would help some! Perhaps there is a very simple method just waiting to be discovered. The often-voiced opinion that people who can't learn Morse are just lazy should be discouraged.

Many amateurs would spend more time on air if they could enjoy sending and receiving Morse Code.

Yours sincerely,

Neil Trainor VK3IJ,
133 Bladin Street,
Laverton, Vic. 3028.

At a recent meeting of FAMPARC, a debate was arranged on the Discussion Paper produced by Jim Linton and Roger Harrison, and the Club would like to thank them for the obvious work and effort that went into the article.

However, the general consensus of opinion after two hours of discussion was that, while we appreciate moves that will increase the interest and membership of our hobby, it should not be at the expense of the technical qualifications built up and increased during the years by members of the Wireless Institute in constant dialogue with the Department of Communications. It has taken great effort to acquire the benefits and amateur bands that we currently have the privilege of using, and any lowering of the standards of entry must be detrimental to the hobby.

Contrary to several opinions, it is *not hard* to gain entry into amateur radio — it does however, take a person with character and perseverance and a great will to join the amateur ranks.

There are hundreds of computer buffs who have entered amateur radio in the conventional way and are a great asset to the hobby, and no doubt there are many more who would benefit amateur radio, but by the same token there are hundreds of others to whom it would be just a *flash-in-the-pan,* and not understanding the sprit of amateur radio, cause a great deal of trouble and dissension.

It is a pity that the Discussion Paper was so long and covered so many suggestions, it was nigh on impossible to cover the entire paper in one evening. However, at the conclusion of the debate, a motion was put that *the members present consider the licensing qualifications required by the Department of Communications are adequate for the needs of amateur radio at present.* The motion was passed — 19 for and three against, with three abstaining.

Gordon Buchanan VK3BGB,
Secretary,
Frankston and Mornington Peninsula Amateur Radio Club,
PO Box 38,
Frankston, Vic. 3199.

The discussion, and subsequent letters have certainly put some points of view, but I feel, looked at the symptoms rather than the causes. Perhaps we do not need more amateurs at any price, ie by twisting examination criteria. Rather, do we need more interest and less apathy from many of our present population.

For example, in Tasmania, there are over 500 licensees. *How many of these are active, or listen but do not communicate? How many do any construction or are active in the WIA?* Local answers would provide a fair yardstick for the national scene.

So what has gone wrong?

The discussion overlooked the impact of developments in our society, affecting every facet of our life-style. Read the daily newspapers, full of wars, crime, violence, sex, divorce, alcohol, drugs, etc, which seems to dominate the news. Sunday is now a day of commerce, sport and fun. Like it or not, we are now practically a pagan country. The relevant point is that all this has affected our whole life-style, tearing at the very fabric of our society, including amateur radio, and it is no use burying our heads in the sand. The good old days have gone.

There is so much diverse activity offering that, whereas at one time, radio predominated the spare time of amateurs, it must take its turn with a multitude of other interests or even be replaced. Many would prefer to take a golf club, skis, or a ball and enjoy life. Or perhaps retire to the local, or go to the weekend shack.

Let us look at amateur radio of a few years ago, before television or computers or too much money interfered. To work and qualify for the AOCP with a 14 WPM Morse test was considered somewhat meritorious. Subsequently, a frenzy of construction followed, as nearly all our *rigs* were *home-brewed,* tested, operated and maintained — likewise test gear. The amateur knew what it was all about with interest divided between construction and operating on air. We had long discussions on air about our gear, exchanging ideas and experiences, and offering advice. The bands were full and we cried for more space. This was amateur radio in the full sense. *What hope is there of this state returning?*

Without question, the enormous advances made in the field of electronics have only served to lure activity away from amateur radio and construction.

To suggest a *Symbiosis* between computer operators and amateurs is, in the main, a pipe dream. The former do quite nicely without the added study and expense of amateur radio. More likely amateurs are lured to computer activity.

It is unlikely that lowering or adjusting grades of licenses will have any long term effect on the problem.

Already, to some, the situation in which licenses

are now obtained appears ridiculous. To take an examination one fills in some numbers or ticks (like a lottery) and hopes for some luck. If successful, all that is needed in some money for a black box. A far cry from the old days.

Now it seems that there is some suggestion for a kindergarten grade. Amateurs at any price! What a pity. *Why not sell licenses at the Post Office?*

For people who wish to communicate without serious study, the Citizen Band is there, and on UHF with repeaters appears to be quite successful.

Surely, if a thing is worth having, it is worth working for. Perhaps the real amateur is part of a dying race. After all, people will decide for themselves their activities. As the old proverb says: *You can lead a horse to water but you can't make it drink.* Radio is no longer a nine days wonder, perhaps amateur radio is on the way-out. We need a genius to solve it.

Max Ives VK7MX,
Cosgrove Park,
Launceston South, Tas. 7249.

In reply to the Discussion Paper, February's AR — the thrust of the paper is to have six licence levels (now four) so that we may increase the number of young men and women joining amateur radio; and to provide digital voice/data techniques on a wider scale than currently in use on the bands.

To do the above, the authors suggest we make the entry points easier, hence the introduction of two new call allocations — the New Novice and the Intermediate.

I, and probably many others, agree on the paper's theme, however, the approach suggested is not only cumbersome, but impractical. Cumbersome because of the great variety of calls proposed and impractical because of not only call sign allocations, but because the real solution is not to be found by making entry into amateur radio easier.

Say, if the above proposals were introduced next year and we had, by the year 2000, the following:
(Figures in brackets also assume we have 30 000 amateurs by 2000).

Below 20 years — 15 percent (4500)
21-30 years — 20 percent (6000)
31-40 years — 20 percent (6000)
41-50 years — 15 percent (4500)
51-60 years — 10 percent (3000)
60 plus — 20 percent (6000)

My figures are based on the early CB to amateur exodus, plus a further factor that indicates amateur radio will double every 13 years. Not unreasonable, provided the eventual total is no more than two percent of the total population. This is because we make amateur radio easier to enter and more attractive to youngsters. The distribution is, of course, ideal. I am amazed that a development of such a strategy is not being considered by the WIA. What would the result be if nothing is done? Must we rely on the release of a paper to get the ball rolling? Are my figures appropriate or will we get thousands of new recruits?

From my figures we well may get an extra 50 percent new amateurs over the first five years and an extra 1200 or so extra every year after that. These numbers, if the proposals are implemented are above existing joining figures of about 400 a year. Quite a strain on the DOC at examination time, but the best part for the WIA would mean an extra revenue double that being received now.

My suggestion is to keep the existing four call allocations of Novice, Limited, Limited/Novice and Full Call, but drop the CW requirement from the Novice exam and give Novices 10 watts on 70 cm (SSB and FM). No data transmit privileges.

Five words per minute CW is *not* CW. To engage anyone at five words per minute for a QSO is impossible and very painful. Most novices conduct their QSOs at greater CW speeds. Indeed, most novices only do the CW to get a licence — not to engage in CW on the bands.

To give a *new novice* 70 cm FM only is just a waste of time. The real traditions of amateur radio are on the HF bands. We all know the benefits of being able to sit and listen to HF for many enjoyable hours. Try listening to VHF/UHF for many hours — mostly silence, local calls and through a repeater. The advantage of FM VHF/UHF lies in the 400 watts PEP power, experimentation with sophisticated gear, transmitting ATV, satellite, RTTY or fast data. These are not within the reach of the youngster, but a cheap HF rig is and a 70 cm unit if needed can be attained either in kit form or from ex-commercial sources. If youngsters were asked which band they preferred I am sure it would be HF, not UHF, so let's give them what they want, not what we want them to have.

Which HF band — 10 metres SSB/FM of course! It is a natural progression from the familiarity of CB and the FM part will be a challenge to get operational — and every youngster needs a challenge.

Every novice knows that the theory is not difficult but the CW is! Every novice thinks seriously about the limited exam and most pass it at their first attempt. The existing novice examination is not difficult and a couple of months of application will get anyone an exam pass. To make the exam easier is not, at this time, appropriate. If such a proposal does not work, then make the exam easier, but I believe CW is the barrier to the younger aspiring amateur — not the theory. Let us not make it easier for the sake of numbers, but let us make it a more exciting licence.

Peter Frederick VK3BSF,
61 Ashwood Drive,
Ashwood, Vic. 3147.

SQUABBLING

So, it is time to squabble over licensing again. It has taken some people a long time to wake up to the fact that the amateur population is in decline. Some of us who have been in the education system for many years have seen that amateur radio is a non-issue with the youth of today. In fact, they do not know that it exists. The question should also be asked *why are the many students of electronics at all levels in TAFE colleges not taking an interest?* There is something wrong with amateur radio as it exists at present.

Electronics has progressed in quantum leaps in the last 20 years. Sadly, most of the amateur fraternity have regressed in their ideas about amateur radio. CB (with all its problems) was the best thing that happened to amateur radio in the last 50 years. Many of these people who started out as pirates became licensed CBers when it was legalised and then took up amateur radio. The key to this is that they bought their equipment, they used it and then wanted something more. The amateur fraternity wants all people to sit in classes for up to a year learning theory out of a book with the prospect of getting on the bands at a much later date.

Most amateurs begrudgingly accept the *new blood* CB brought to the hobby of amateur radio, none-the-less, CB is almost always used as a derogatory term by many amateurs who sit around reminiscing about the old days, the attempts to jam people on 11 metres, the *pinching of our bands*, etc. These people are not ratbag stirrers, we are sure they are solid citizens. Of course, it is still going on by other *responsible citizens* (see editorial in ARA, February 1986). We ask you, what prompts a *solid citizen* and a licenced amateur to jam a UHF CB repeater for seven hours every night?

The amateur radio fraternity has long suffered from a combination of arrogance and elitism. Amateurs always keep telling each other how important they are to the community. We put it to you that 99 percent of the community do not know anything about amateurs and frankly, do not care. This *we are important to the community* argument may have been true in the past but it is wearing a bit thin in the 1980s. It only serves to fool people that amateur radio is not *just another hobby* but something special.

We are sure it is something special to most of the current amateurs; but not for long. One only has to browse through the pages of the WIA Journal, Amateur Radio, to realise that amateur radio is an old man's hobby. In all the pictures you would be lucky to find a person under 40, and virtually no women or teenagers. Contrast this with a meeting of MBUG (Microbee Club), there you will find a truly representative cross-section of the population.

Looking at the statistics on the amateur population, it is clear to see why this is the case, and, why one can tune around the bands most of the time and find great expanses of nothing. Most of the bands resemble 11 metres before CB took over. The spectrum is a scarce, natural and public resource and should be used by as many people as possible. The aim of the licensing system should be to maintain order on the bands and ensure there is no interference to other users. The current system, through this fallacious *maintenance of technical standards* argument serves only to keep by far the greater majority of the people interested, off the air.

The arrogance, the elitism, the resistance to change that pervades the amateur fraternity is shown very well by the letter from Mr B Wilton VK3XV. On the Linton/Harrison proposal: *This would appear to be a retrograde step . . ., I seriously wonder who would gain the most from this 'marriage' . . . the amateur radio movement or the computer hobbyists? We must not allow our technical standards to be lowered — if anything they should be raised!.* No problem, Mr Wilton. Keep the bands to yourselves so most of you can sit there with your expensive, off-the-shelf toys and carry on inane conversations which laughingly pass for traffic related to *technical investigations, research into or instruction in radio communication techniques.* But maybe the DOC should take you up on the raising of technical standards. In fact, re-testing should be introduced for every amateur every three years. The DOC can then make sure that all are up-to-date with the latest micro-processor technology used in the latest transceivers. Many of the amateur population take themselves too seriously with all this technical standards nonsense. The way most amateurs keep up with technological developments is by buying the latest micro-processor controlled transceiver!

These arguments about *standards* will serve only to maintain the elitism of amateur radio and eventually allow it to die. We cannot understand how these people expect amateur radio to survive and expand if the current population of amateurs is aging and very few new young people are entering.

We think the Linton/Harrison proposal does not go far enough. It is basically a slight re-arrangement of the current system. We suggest that a totally new approach be taken. The Canadian proposal seems the more sensible and logical:

a For operations on all bands and all modes above 30 MHz, using commercial equipment only, with 250 watts.
— A shift away from technical knowledge and an emphasis on the knowledge of regulations, interference problems and antenna theory.
b For operation below 30 MHz.
— 12 words-per-minute Morse.
c For operation on all bands and all modes with the option of building equipment and 1000 watts.
—Knowledge of advanced electronic theory.

In fact, we would go further, eliminate the Morse requirement totally. Australia has to date not adhered to ITU rules by allowing 10 and five words-per-minute for operation below 30 MHz.

This type of licensing would have the effect of increasing the amateur population by bringing in many people who have an interest in electronics, computers and communications but normally use commercial equipment. There are many people who are responsible citizens who would be lesser nuisances than some of the currently licensed amateurs. As has been shown many times in all walks of life, passing exams does not guarantee proper and civilised behaviour.

One argument that is advanced against commercial equipment is that it will be too expensive for young people to get into. This argument is made in the March issue of AR. To this we say *look at the prices of commercial radio equipment at the bottom end of the market, it is cheaper than most computers.* Do you see young people not getting interested in computers

because of the price? With the right form of licensing it could even stimulate the local manufacture of suitable equipment for beginners. Philips is certainly well set up for UHF equipment (eg FM 620).

Drastic changes will be made in the future, otherwise the amateur population will simply die-off. Why not implement something along the lines of the Canadian proposal now and be in the forefront of the development of the hobby instead of having the WIA and many other conservative amateurs fighting change until they literally die and in the process kill amateur radio.

Amateurs are allocated just over 1506 MHz of spectrum space. Most of this is now prime space which the current amateur population as it stands, hardly makes an impression on.

The pressure for spectrum space is increasing exponentially. How long will it be before commercial interests and the government start to take a good, hard, look at those large slabs of little used space allocated to amateur radio in the VHF and UHF bands, especially?

We call on the Minister for Communications, DOC, the WIA, ARA and all progressive amateurs to work towards a totally new licensing system. A system that takes into account the technology of the 1980s. A system that allows a much greater proportion of the population on the air. A system that is attractive and has relevance to the youth of today.

Signed by:
Harry Fatouros, Computer Department 1980-1985, Preston Technical School.
Chris Holliday VK3JU, Preston Technical School, (VK3CPT).
Frans de Bruijn VK3KFV, Box Hill College of TAFE.
Greg Segal, GWS Audio/Visual.
Ian Batty VK3ZEV, Former Co-ordinator (TV), Moorabbin College of TAFE.
Peter Cossins VK3BFG, Electronics Technology, Box Hill College of TAFE.

ST

DanHard welcome here

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- Complete range of *MIRAGE (USA)* equipment including 6m, 2m and 70cm amplifiers, also peak reading Watt/SWR meters. All have a five year warranty.

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- High gain VHF and UHF TV and Scanning Antennas.

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AUSTRALIA'S DYNAMIC ELECTRONICS MONTHLY!

Electronics Today INTERNATIONAL

FIBRE OPTICS ARRIVES

Having been talked about for years fibre optics finally makes it to the market. There are large scale operations now for its installation and manufacture.

ALSO IN JUNE

★ ETI puts the Marconi 2955 communications service monitor through its paces.
★ Starting Electronics: a look at opto-electronics.
★ Printed Circuit Boards: a revolution in manufacturing.

PROJECTS:
★ Electrostatic hazard alarm
★ Intelligent modem
★ Car demister timer
★ Digital sampler

Silent Keys

It is with deep regret we record the passing of —

MR MAXWELL H BONE VK5BMH
13th March 1986
MR GEORGE HUMPHREY VK2NO
18th March 1986
MR C H JUDD VK5HQ
PROFESSOR RICHARD KELMAN VK2EEW
4th March 1986
MR EDWARD (Ted) SIMPSON VK2ES
21st June 1985
MR ARTHUR L STEHN VK4IS
16th March 1086
MR ALEXANDER (Alec) G SWINTON
VK3AAP (ex2AAK, 2AAG)
25th March 1986
MR C E WALTON VK3PWA

Obituaries

ARTHUR L STEHN VK4IS

Arthur passed away on 16th March at Maleny Hospital, having suffered declining health for sometime. He was first licensed as VK4ZLS in 1966, then obtaining his full call VK4IS in 1968, whilst at Rockhampton.

His other hobbies included photography and woodworking. During his working life he was attached to the Education Department, Meteorology Department and PMG's Department from which he retired. After retirement, he operated the Montville Model Railway Dome. This is where I first met Arthur in 1980. We became firm friends, then neighbours whilst living at Flaxton.

Arthur was one of natures gentlemen. Deepest sympathy is extended to his wife Florence, daughter Denise, and son Ronald.

Roy Stephens VK4BRS (ex VK3ARS)
ar

RICHARD KELMAN VK2EEW

Professor Richard Kelman VK2EEW came to Australia three-years-ago to establish the chair of Occupational Medicine at the University of Newcastle. The professional chair he held was only the second of its kind in Australia.

He passed away on 6th April 1986, at the age of 52.

Richard was an affable and friendly man who quickly made friends in the community and within the ranks of amateur radio. He confined his operations to CW in the HF bands. In addition, he was a skilled computer experimenter and programmer.

Richard had a distinguished academic career in the United Kingdom before coming to this country. His qualifications included Master of Science, Doctor of Medicine and PhD.

He leaves a wife, Elizabeth, and three adult children to whom we extend deepest sympathy. He will be sorely missed by his many colleagues and friends.

Contributed by Tony O'Brien VK2BOA
ar

Did you know?
Hamads are a free service to members of the WIA.
When contemplating buying or selling equipment, check the Hamads first.

TEST EQUIPMENT

AUSTRALIA'S LARGEST RANGE OF SECOND HAND:

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Oscilloscopes, sig gens, spectrum analysers, multi meters. Wide range of amateur and communications equipment — valves, coaxial connectors and test accessories. Repairs and service to all makes and models.

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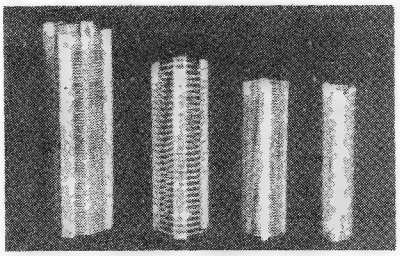
(03) 288 3611
AR86

AIR-WOUND INDUCTANCES



No	Diam	Turns per Inch	Length	B & W Equiv	Price
1-08	½"	8	3"	No 3002	$1.60
1-16	½"	16	3"	No 3003	$1.60
2-08	⅝"	8	3"	No 3006	$1.90
2-16	⅝"	16	3"	No 3007	$1.90
3-08	¾"	8	3"	No 3010	$2.30
3-16	¾"	16	3"	No 3011	$2.30
4-08	1"	8	3"	No 3014	$2.60
4-16	1"	16	3"	No 3015	$2.60
5-08	1¼"	8	4"	No 3018	$2.90
5-16	1¼"	16	4"	No 3019	$2.90
8-10	2"	10	4"	No 3907	$4.20
8-10/7	2"	10	7"	No 3907	$7.20

Take the hard work out of Coil Winding — use "WILLIS" AIR-WOUND INDUCTANCES

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SOLAR GEOPHYSICAL SUMMARY — FEBRUARY 1986

Solar activity for February was dominated by two regions which returned to the visible solar disc late in January. The regions produced a sequence of energetic solar flares, including X class events on 4th and 6th.

Feb 1	*Class M1*	2034-2115 UTC Effect times
Feb 4	*Class M1*	1018-1054 UTC
	Class X1	0732-0805 UTC
Feb 5	*Class M1*	1232-1321 UTC
Feb 6	*Class X1*	0618-0707 UTC
Feb 7	*M1*	0947-1126 UTC
Feb 11	*M2*	0328-0413 UTC
		2259-2345 UTC
Feb 13	*M1*	0102-0419 UTC
Feb 14	*M1*	0902-1028 UTC
Feb 15	*M2*	1016-1300 UTC
		1304-1316 UTC

The regions also produced a sharp rise in the 10 cm flux levels which peaked at 103 on 5th. This flux value is the highest for any day since 5th July 1984. The regions had disappeared over the western edge of the sun by the 15th and the flux levels dropped to low levels.

The first of the previously active regions reappeared on the visible disk of the sun on 26th and produced a rise in the 10 cm flux late in the month.

10.7 CM FLUX

1=84; 2=90; 3=99; 4=101; 5=103; 6=102; 7=99; 8=98; 9=95; 10=99; 11=98; 12=91; 13=89; 14=90; 15=82; 16=73; 17-20=70; 21=67; 22,3=69; 24=70; 25=72; 26=74; 27=77; 28=79.

Average = 83,9. Sunspot number 23,6. Yearly average 8/85 = 16,6.

GEOMAGNETIC ACTIVITY

7-9/2 The geomagnetic filed became disturbed towards the middle of the 7th and was at major storm levels by the end of the day. 8th was one of the most disturbed days in the last 25 years. The early part of the 9th was also very disturbed but weakened towards the middle of the day. A=57, 208, 74.

14/2 The field was active 1400-2100 UTC. A=25.

21-28/2 The field was generally disturbed for the entire time, the worst periods being 09-1400 21st, 00-0200 and 14- 1800 on 22nd and 00-1800 on 23rd. A=22, 23, 25, 15, 17, 20, 19, 19.

The magnetic disturbance of 7-9th was a particular noteworthy feature of the month. It is difficult to compare disturbances, this event was large by any standards and was probably the largest since November 1960. It coincided with reports of aurorae sightings from much of mainland Australia. Sightings ranged from just north of Sydney, Northern New South Wales and around Brisbane. This event was almost certainly caused by the X class flare at 0625 UTC on the 6th.

The A index average more than doubled from 11,5 in January to 23,4.

Extracted from Solar Geophysical Summary supplied by the Department of Science IPS Radio and Space Services.
ar

AMATEUR CARTOONS

The name Phil Gildersleeve W1CJD, would probably mean little to most amateurs but to the readers of QST and some ARRL ancillary publications, from 1927 until the 1960s his work would be very familiar. Phil was known simply as *Gil* and was responsible for many hundreds of humorous cartoons which appeared in ARRL publications.

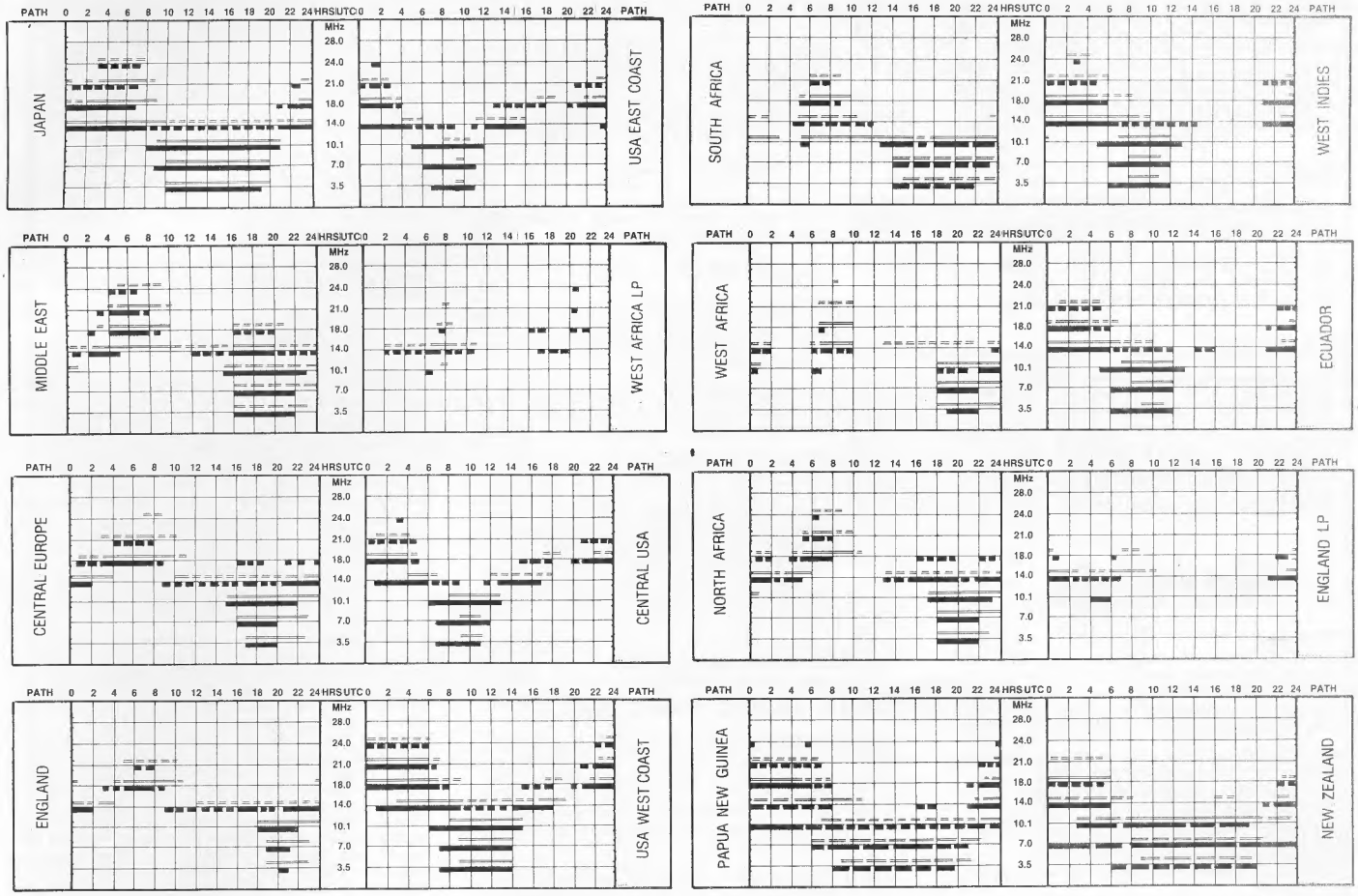
A new ARRL book, titled *Gil* has reprinted the best of these cartoons.

Should be most interesting for the old time subscribers to QST.

From The ARRL Letter

Ionospheric Predictions

Len Poynter VK3BYE
14 Esther Court, Fawkner, Vic, 3060



LEGEND

From Western Australia (Perth)

From East Australia (Canberra)

Better than 50% of the month but not every day (continuous lines)

Less than 50% of the month (short broken lines)
Mixed Mode Dependent on angle of radiation (long broken lines)

Paths unless otherwise indicated (ie: LP = long path) all paths are short path.

Predictions are presented courtesy of the Department of Science, IPS Radio and Space Services, Sydney.

FUTURE TRENDS IN SOLAR ACTIVITY

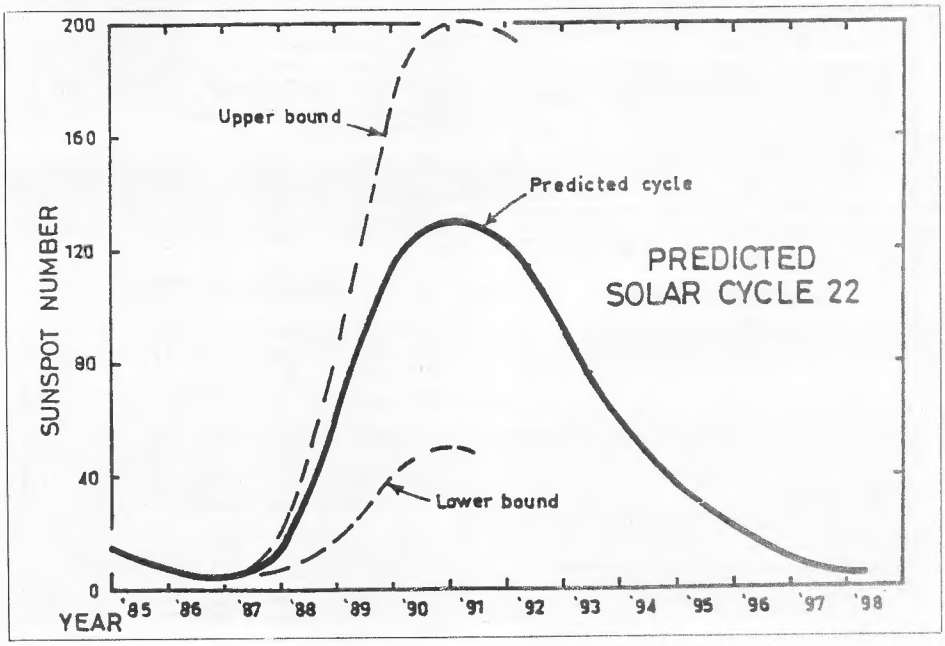
Solar Cycle number 21 is now approaching its end as the yearly-averaged sunspot number drops to values typical of solar minimum conditions. At this time, it is appropriate to ask what the next solar cycle will look like. The subject has been (as usual) the centre of keen debate for a number of years and (as is also usual) there is no consensus view whatsoever. In particular, estimates of the maximum sunspot number of the next solar cycle vary wildly — from as low as 50 to as high as 200.

IPS has prepared a prediction based on the most highly regarded techniques of the papers presented at the *Solar- Terrestrial Predictions Workshop* held in Paris during 1984.

It predicts the minima of Cycle 21 late in 1986 and Cycle 22 rising to a peak of 130 in mid-1990 and falling to around 10 in 1998.

Cycle 21 went into the history book as the second highest since records began. I guess we will just have to be patient and see what happens. In the meantime, just keep an ear on the daily reports to find the best periods. The DX is there even on 28 MHz for those who are in the know.

ar



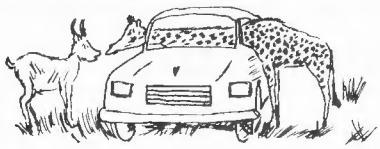
THOUGHT FOR THE MONTH

Silence is better than unmeaning words.

PORTABLE PHONES SOON

A new mobile telephone service, in the form of low powered pocket phones and vehicle mounted units, being introduced in Australia will take personal communications into the 21st century.

The high capacity cellular radio system with 600 channels at 800 MHz will begin in Sydney around December, be introduced in Melbourne by March 1987, and progressively spread to other areas.



DEADLINE

All copy for inclusion in the July 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, 20th June 1986.

Hamads

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.*

* Please remember your STD code with telephone numbers
* Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members
* Copy in typescript, or block letters — double-spaced to **Box 300, Caulfield South, Vic. 3162**
* Repeats may be charged at full rates
* QTHR means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

Conditions for commercial advertising are as follows:

$22.50 for four lines, plus $2.00 per line (or part thereof)

Minimum charge — $22.50 pre-payable

Copy is required by the Deadline as indicated below the indexes on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver & Transmitting Applications. For data & price list send 105x 220mm SASE to: **RJ & US IMPORTS,** Box 157, Mortdale, NSW. 2223. (No inquiries at office . . . 11 Macken Street, Oakley). ***Closed for business during July.*** Agencies at: Geoff Wood Electronics, Rozelle, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza. ACT.

WANTED — NSW

COMPLETE MANUAL OR CIRCUIT DIAGRAM: for Trio Model TR-2E tcvr for 2m. Brian VK2DHO, QTHR. Ph:(068) 62 2828.

RCA AR88D: must be complete & mech good cond. Brian Robertson, 32 Robert Street, Telopea, NSW. 2117. Ph: (02) 871 4863.

VALVE: 6GY6 or 6GX6 or 6HZ6, for Galaxy tcvr. VK2VJ, QTHR. Ph:(02) 750 0985.

YAESU FT-690R & FT-790R. Also accessories — YM-49, YM-50 mics, MMB mounts, FLC cases. Bob VK2CAN. Ph:(02) 265 8064 (BH) or (02) 46 3727 (AH).

WANTED — VIC

COMPLETE WORKSHOP SERVICE MANUAL: or photocopy of Siemens M100 (Series 1) teleprinter. Lyle VK3KLR. Ph:(03) 555 2601 (AH).

BEARCAT 210: or similiar. In good working condition. Ph:(03) 211 6406.

VALVES: 811A tubes, with sockets for use in a linear. VK3JM. Ph:(03) 221 4972.

WANTED — QLD

YAESU FT-901 DM, FV-901 DM, FTV-901: must be in A1 condition. Mick VK4VNN, QTHR. Ph:(071) 98 2282.

WANTED — SA

ROBLAN VARIABLE SINGLE GANG CAPACITOR: 10-415 pF. Brian. Ph:(08) 293 7027.

FOR SALE — NSW

BOOMLESS QUAD DUO-BAND: 10-15m, 2el. Complete with Braces, spreaders, coaxial transformers, etc. $125. Piezo Dynamic DX-344 desk mic. $60. All as new. VK2VRT, QTHR. Ph:(043) 41 7693.

COMMODORE 1525 PRINTER: in new condition. Suits VIC20, C64, C128, PET or any of the Commodore range. $350. Vicki VK2EVM, QTHR. Ph:(063) 68 2137.

EXCELLENT RADIO LOCATION: 15 min from Mudgee. 4 bedroom fibro cottage, 2 years old. Power, phone connected, school bus at gate. Set on 55 acres. Fully fenced with 3 dams. Includes 1 weekender, 2 x 5000 gal concrete water tanks & 1 x 1000 gal galv tank. 50 feet free-standing radio tower with 5el mono-band Yagi & 5-band ground plane on roof. $87 000 ONO. VK2EHF. Ph:(063) 73 5370.

HELIAX LDF4-50A: unused length of 8m for $65. Brand new set of 8 C-sized NiCAD batts @ $4.50 each. Ph: (02) 817 2652.

KENWOOD TR-9500 UHF ALL-MODE TCVR: in immac cond complete with mic, m/bracket, manual, no mods, no bugs. $500. Kenwood SW-100 UHF SWR meter to match above. $40. Max VK2GE, QTHR. Ph:(043) 92 4900.

KENWOOD TS-430S: F tx. All filters, FM board, workshop & operators manual, mic, inc. 900. 25A H/B power supply. $100. MC-50 mic. $40. TS-430S workshop manual. $20. Shure 444D mic. $100. Shure 444 mic. $75. 5-500W Tandy SWR/PWR meter. $20. Drake TVI filter, 2kV rating. $20. H/B 10-15m, Yagi beam. $50. Ian Wilkinson VK2PKB. Ph:(049) 32 8935.

SHACK CLEARANCE: Icom 701 in mint cond with IC-701PS, desk & hand mics, manuals, just serviced by Icom. $600. Yaesu 227RB 2m rig, with scan mic, manual. $225. ATN144 Log periodic, 8el ant & Dick Smith mini-rotator with cable. $125. Professor Morse keyer & random Morse sender for practice to 50 WPM. $100. VK2AOO, QTHR. Ph:(063) 62 5977.

TRAPPED VERTICAL ANTENNA: V5JR for 10-80m (DSE D-4305). $60. Bob VK2CAN. Ph:(02) 265 8064 (BH) or (02) 46 3727 (AH).

VZ200 COMPUTER: P/S etc in orig packing with DSE RTTY interface + leads. $120 ONO. 16k VZ300 memory expansion in orig packing. $70. Programs — log, ant design, RTTY, CW, assembler, dis-assembler, etc. $10. The lot $170. VK2EVB, PO Box 433, Coffs Harbour, NSW. 2450. Ph:(066) 52 7160.

YAESU FT-757GX: $1100. AWA noise & distortion meter $200. Signal generator 45-180 MHz. $110. FM monitor/test rx 40-270 MHz. $80. Cavity tuned 4CX250 output stage 420-470 MHz. $75. Power supply for above. $90. Peter VK2CPK, QTHR. Ph:(02)238 7889 (BH) or (02) 411 1227 (AH)

FOR SALE — VIC

ASACA B&W CAMERA: with variable lens, circuits & books. Also monitor. Used for SSTV or security watch. Mint cond. $350. Ph: (03) 725 9285.

DAIWA 7600X HEAVY DUTY ROTATOR: with pre-set controller, never used; brand new. $350 ONO. Must sell. Steve VK3DQL, QTHR. Ph:(050) 37 2391.

HAMPAC MODEM III FOR APPLE COMPUTER: Complete with instructions & software. As new. $100. Andrew VK3KIR, QTHR. Ph:(03) 232 9649.

KENPRO ELEVATION ROTATOR: Type KR-500, 28V AC, new in box. $200. Rolex Airman's watch, Oyster Perpetual, SS GMT Master Superlative Chronometer, officially certified with Rolex Oyster Bracelet. Ex cond. $600 ONO. (new price $1590). VK3BRE, QTHR. Ph:(055) 62 6016.

KENWOOD TS-820S TCVR: with MC-50 mic in ex cond. Very little use. $500. Craig VK3NAG. Ph:(03) 397 5287.

KW TR-9130 MULTI-MODE 2m TCVR: c/w BO-9 base stand. Ideal for satellite use. Ex cond. $500. VK3APT, QTHR. Ph: (054) 28 6516 (AH).

FOR SALE — QLD

TELEPRINTER MODEL 15 ON TROLLEY: includes loop supply & modem. Has selectable BAUD rate, shift, polarity, UART regenerator & all circuit diagrams. $75 ONO. Ross VK4ARG. Ph:(07) 376 6452 (AH).

YAESU FT-501 TCVR: 400W PEP digi readout. Completely over-hauled including new driver & finals. $525. Yaesu 2 & 6m transverters to suit 101E. $220 each. Mick VK4VNN, QTHR. Ph:(071) 98 2282.

YAESU FT-902D HF TCVR: including hand mic, power lead & operation manual. $600. Also IC-202 2m SSB tcvr with OSCAR xtal, hand mic & documentation. $100. Steve VK4AWO, QTHR. Ph:(070) 91 1435.

FOR SALE — SA

ATTENTION — AN EME ENTHUSIAST: Owing to work load limitations place on me due to back injury, I must sell my partially completed EME installation for part of its full value. 24 x 16' aluminium pop rivetted trusses shaped & assembled ready to make 32' parabolic (dish) antenna with f/d 0.45 & 31 dB projected gain on 70 cm. 1296 MHz gain well over 40 dB. All ⅞" al tubing, vertical supports end notched, gusset plates & monel rivets. Half completed central hub assembly (welded steel industrial tubing). Solidly constructed reverse rib truss & separate precision axle for testing shape of parabola. On hand materials include 3 rolls ½" square welded & galv steel mesh to cover dish; ⅜" al tubing to complete concentric rings; enough ⅞" al & 1" steel tubing to probably complete construction; 4'6" turntable for azimuth movement complete with shafting, gear-box, & 240V motor; assembly equipment inc rolling mill for shaping aluminium, notching machine, 96 SS bolts for central hub, quantity pop rivets, gusset plates, etc. Also 16' 4-leg tower for mounting dish (needs to be cut from concrete base) made from heavy angle steel, rust treated & undercoated. All above $2900 cash. (An array of 16 x 16 el antennas with power dividers, rotators, mast, H frames, cross arms, phasing lines, etc would cost around $5000 & still be 5 to 6 dB lower in gain than this dish). Also electronic equip avail for sale after dish is sold — first offer to buyer of dish. K2RIW 1000W 70 cm amp, parts to construct 2 kV power supply, Drake R4B rx & T4XB tx, blowers, Rustrak chart recorder, dB meter, MM 1296 MHz transverter plus 100W 1296 MHz tx (ex VK2BQJ), spare valves & other parts. Eric Jamieson VK5LP, QTHR. Ph:(08) 389 1204 inspection by appointment only.

SIEMANS MODEL 100 TELEPRINTER: with local & tape tx & rx. Comes with 2 rolls of paper, a roll of paper tape, & new ribbon. All documentation incl. $60 ONO. Mike VK5AEK. Ph:(08) 339 4959.

YAESU YD-148 DESK MIC: new & unused 8 pin. $35. SWL antenna tuner, home brew. $25. Teak Computer Desk, new. $70. 20 new, unused floppy disks. $50 the lot. Charlie VK5YC. Ph:(08) 258 0320.

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AIMING HIGH WITH COMMUNICATIONS ACCESSORIES FROM GFS

WAY OUT FRONT IN AIRBAND PORTABLES THE NEW ATC-720X

- BALLOONISTS
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- EMERGENCY COMMS
- RESCUE OPS
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- GLIDERS
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- HANG GLIDERS
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920 CHANNEL NAV COM — PLUS 4 MEMORY SCAN PORTABLE TRANSCEIVER

The New ATC-720X provides inexpensive airband communications for a wide range of applications. Its most important includes promoting the peace of mind which comes from knowing you have an emergency back-up transceiver with you. It is supplied complete with rubber antenna, alkaline batteries and carrying strap. **$749 · S.T. · $14 P&P $889 Inc S.T.**

AR-2002 Continuous Coverage 25-550, 800-1300 MHz Scanner

If you want continuous coverage, AM/FM wide & narrow with 20 memories we suggest you choose the AR-2002 from GFS

$799 +$14 P&P

AR-RS232 Computer Interface for AR-2002 $499. + $8 P & P

LOW LOSS FOAM DOUBLE SHIELDED COAXIAL CABLE

LOSS IN DB/30 METRES

TYPE	100 MHz	200 MHz	400 MHz	900 MHz
5D-FB	1.86	2.70	3.90	6.00
8D-FB	1.20	1.74	2.58	3.90
10D-FB	0.99	1.44	2.10	3.30
12D-FB	0.84	1.23	1.80	2.79
RG-8/AU	2.20	3.20	4.70	8.00
LDF-450	0.75	1.40	1.80	2.50

FB SERIES CABLE & N CONNECTORS

CABLE		N-CONNECTORS	
5D-FB	$2.90m	NP-5DFB	$12.00 ea.
8D-FB	$4.20m	NP-8DFB	$12.40 ea.
10D-FB	$6.30m	NP-10DFB	$12.90 ea.
12D-FB	$8.70m	NP-12DFB	$13.70 ea.

HG-VHF SWR-POWER METER

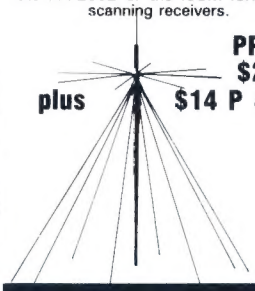
Compact, two power ranges, 0-12 Watts & 0-120 Watts, switchabel HF-VHF with lighted meter. **$65 plus $8 P & P**

NEW HS-VK5 5 BAND HF VERTICAL

Fully self supporting & complete with self supporting loaded radials. **$299 and $14 P & P**

NEW BROADBAND OMNIDIRECTIONAL ANTENNA 25 TO 1300 MHZ

The new D-130 is one of the latest generation full coverage HF/VHF/UAF omnidirectional antennas. It provides continuous operation from 25 to 1300 MHZ and is ideally suited to the likes of the AR-2002 or the ICOM ICR-7000 scanning receivers.



PRICE $229 plus $14 P & P

QUALITY CERAMIC EGG INSULATORS NOW AVAILABLE AT GFS

Search no more for those hard to get ceramic egg insulators, GFS. have now secured a reliable overseas service. **CAT E-GG $1.50 ea. or $12 for 10. Plus $4 P&P**

SCAN THE BANDS WITH OUR MICROCOMM SX-155 PROGRAMMABLE POCKET SCANNER

This new unique scanner provides coverage of 26-32, 68-88, 138-176 and 380-514 MHz with a sensitivity of less than 0.5 uV. Four banks of 40 memory channels, total of 160 memories. High scan speed of 16 CH/SEC. Auto search and store mode. Priority channel, 4 hour life on supplied Nicad batteries. 24 hour clock. Selectable Scan/Search delay of 0.1 or 2 seconds. Includes Nicads, charger, carrying-case and antenna.

$449 + $14 P & P

ANTENNA MATCHER FOR CONTINUOUS HF COVERAGE - MFJ-941D

Apart from being extremely versatile the MFJ-941B includes a 6-position coax-switch, SWR power meter, 4:1 Balun and will feed balanced line, single wire and coaxfeed antennas.

$349 + $14 P&P

2 KW DUMMY LOAD

MFJ-250 Low SWR to 400 MHz, 2 KW PEP, supplied with transformer oil.

$99 +$14 P & P

EXPANDED RANGE OF HF-VHF-UHF ANTENNAS

BROADBAND ANTENNAS

LOG SP — 65 to 520 MHz

$199 + $14 p&p

LOG-S 100 to 520 MHz

$139 + $14 p&p

HF BROADBAND DIPOLES

New T2-FD series provides continuous HF coverage

200 WATT MODELS

3.5-30-T2-FD-200 is 25m long, 3.5-30 MHz.
1.8-30-T2-FD-200 is 30m long, 1.8-30 MHz, **both priced at $171 + $14 p & p**

2KW MODELS

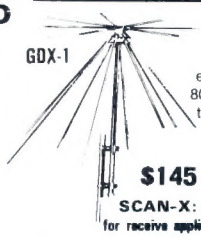
3.5-30-T2-FD-2KW is 40m long, 3.5-30 MHz.
1.8-30-T2-FD-2KW is 50m long, 1.8-30 MHz, **both priced at $228 + $14 p & p**

RF NOISE BRIDGE WITH BUILT IN EXPANDER

MFJ-202B

These individually calibrated noise bridges read both inductive & capacitive reactance over a much wider range than the others. Simple to use and covers 1 to 100 MHz. **$199 + $14 P&P**

BROADBAND OMNIDIRECTIONAL ANTENNAS FOR SCANNERS



GDX-1: 16 element discone 80-480 MHz suits transmitters and receivers.

$145 + $14 p&p

SCAN-X: 6 element discone for receive applications 65-520 MHz

$92 + $14 p&p

FOR THE RTTY OPERATOR

MDK-17 (KIT) MOD-DEMOD

A high performance RTTY/CW modem kit for use on a computer or teletype. Offers high noise immunity on receive. **$142 + $6 p&p (kit) or $219 $8 p&p (assembled).**

MFJ-1224

Versatile RTTY/CW modem. Interfaces with a computer and is supplied with software for VIC-20 or Commodore-64 **$365 + $14 p&p**

NOW AVAILABLE ELECTROPHONE 27 & UHF. CB

We now stock the popular range of electophone CB transceivers. For a competitive price and helpful information on which model to use for your application give us a call or simply drop in

Great Circle Map

Now point your beam in the correct direction using this Great circle Mapl centred on Melbourne **$2** + $3 P&P.

What is stronger than wire of equivalent cross section, non corrosive, non conductive, and has virtually no elongation?

NEW DEBEGLASS WIRE

Now, guy your tower without having to break the wires with dozens of egg insulators, or worrying about them corroding away due to a salty atmosphere. Our Debeglass wire alternative is made using continuous filament fibreglass yarn, jacketed in UV stabilized vinyl chloride. Compare the figures below.

	DB-4 (4mm)			DB-5 (5mm)		
	Core diam (mm)	Wt of 200mm (gm)	Tensile Str (kg)	Core diam (mm)	Wt of 200mm (gm)	Tensile Str (kg)
Deceglass	2.5	3.9	430	3.0	6.3	560
Steel wire	2.5	5.6	370	3.15	9.3	530

DB-4 (4 mm) $0.55m DB-5 (5 mm) $0.78 DB-6 (6 mm) $1.30 Debeclip Termination Clip to Suit DB4, DB5, DB6 $4.95 each

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ICOM IC-R71A

The Best Just Got Better

IC-GC4
World Clock

ICOM introduces the IC-R71A 100KHz to 30MHz superior-grade general coverage receiver with innovative features including keyboard frequency entry and wireless remote control (optional).

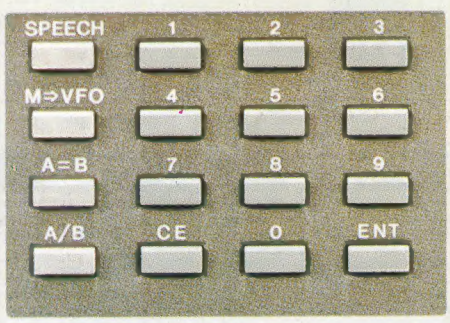
This easy-to-use and versatile receiver is ideal for anyone wanting to listen in to worldwide communciations. Demanding no previous shortwave receiver experience, the IC-R71A will accommodate an SWL (shortwave listener), Ham (amateur radio operator), maritime operator or commercial operator.

With 32 programmable memory channels, SSB/AM/RTTY/CW/FM (optional), dual VFO's, scanning, selectable AGC and noise blanker, the IC-R71A's versatility is unmatched by any other commercial grade unit in its price range.

Superior Receiver Performance. Utilizing ICOM's DFM (Direct Feed Mixer), the IC-R71A is virtually immune to interference from strong adjacent signals, and has a 100dB dynamic range.

IC-RC11
Infrared
Remote

Passband tuning, a deep IF notch filter, adjustable AGC (Automatic Gain Control) and noise blanker provide easy-to-adjust clear reception, even in the presence of strong interference or high noise levels. A preamplifier allows improved reception of weak signals.



Keyboard Entry. ICOM introduces a unique feature to shortwave receivers... direct keyboard entry for simplified operation. Precise frequencies can be selected by pushing the digit keys in sequence of frequency. The frequency will be automatically entered without changing the main tuning control. Memory channels may be called up by pressing the VFO/M (memory) switch, then keying in the memory channel number from 1 to 32.

VFO's/Memories. A quartz-locked rock solid synthesized tuning system provides superb stability. Three tuning rates are provided: 10Hz / 50Hz / 1KHz.

32 Tunable Memories. Thirty-two tunable memories, more than any other general coverage receiver on the market, offer instant recall of your favorite frequency. Each memory stores frequency, VFO and operating mode, and is backed by an internal lithium memory backup battery to maintain the memories for up to five years.

Options. FM, synthesized voice frequency readout (activated by SPEECH button), RC11 wireless remote controller, CK1 DC adapter for 12 volt operation, MB12 mobile mounting bracket, two CW filters FL32 — 500Hz, and FL63 — 250Hz, and high-grade 455KHz crystal filter FL44A.

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The World System

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